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Sir:

Transmitted herewith for filing is the patent application of

Inventor(s): TESHIMA, Atsushi

For: FONT SHARING SYSTEM AND METHOD, AND RECORDING MEDIUM
STORING PROGRAM FOR EXECUTING FONT SHARING METHOD

Enclosed are:

☒ A specification consisting of 49 pages

☒ 19 sheet(s) of Formal drawings

☒ An assignment of the invention

☒ Certified copy of Priority Document(s)

☒ Executed Declaration ☒ Original ☐ Photocopy

☐ A verified statement to establish small entity status under 37
CFR 1.9 and 37 CFR 1.27

☐ Preliminary Amendment

☐ Information Disclosure Statement, PTO-1449 and reference(s)

Other _____

The filing fee has been calculated as shown below:

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TOTAL CLAIMS	20 - 20 =	0	x18 =\$ 0.00	or	x 9 = \$ 0.00
INDEPENDENT	8 - 3 =	5	x78 =\$ 390.00	or	x 39 = \$ 0.00
MULTIPLE DEPENDENT CLAIM PRESENTED <u>no</u>			+260 = \$ 0.00	or	+130 = \$ 0.00
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Respectfully submitted,

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SPECIFICATION

TITLE OF THE INVENTION

FONT SHARING SYSTEM AND METHOD, AND RECORDING MEDIUM

STORING PROGRAM FOR EXECUTING FONT SHARING METHOD

5

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to a system and method in which fonts are shared by a client computer and server capable of performing data communication with each other, a recording medium storing a program for executing a font sharing method, a client computer constructing a system in which fonts are shared, and a method of controlling the operation thereof.

Description of the Related Art

15 In a case where data is communicated between a client computer and a server and text is displayed or printed, three methods of displaying or printing characters having specific fonts are available.

Specifically, the first method includes transmitting data representing a character as well as data such as a name specifying the a character font from the client computer to the server and having the server display and/or print the a character having the font. Alternatively, the method includes transmitting the data representing a character as well as data such as a name specifying the a character font from the server to the client computer and having the client computer display and/or print the a character having the font.

The second method includes transmitting outline information from the client computer to the server and having the server display, for example, a character having an outline in accordance with the outline information, or transmitting outline information from the server to the client computer and having the client computer display, for example, a character having an outline in accordance with outline information.

The third method includes transmitting bitmap image data from the client computer to the server and having the server display, for example, a character based upon the bitmap image data, or transmitting bitmap image data from the server to the client computer and having the client computer display, for example, a character based upon the bitmap image data.

The first method is not appropriate for the current trend toward use of multiple platforms. The second method sends and receives outline information and therefore makes it difficult to protect any copyright that a font might possess. The third method sends and receives bitmap image data and therefore involves difficulty in terms of performing editing using the character. Since a large quantity of data is involved, moreover, communication cost is comparatively high.

There are also systems in which one host computer and a plurality of client computers are connected by a network and outline information for an outline font is transmitted from the host computer to the client

computers in response to a transmission request.
However, since the outline font depends upon the
operating system, font type and character codes, etc.,
this arrangement is not very suitable for cases where
5 foreign-language text is displayed or printed.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is
to make it possible for fonts to be shared by a client
computer and server in an efficient manner.

10 A font sharing system according to the present
invention is one in which data can be communicated
between a client computer and a server. The client
computer has means (a transmitting device) for
transmitting character specifying data, which specifies
15 a character, and font specifying data, which specifies
the font of the character, to the server. The server
includes first character image data storage means (a
first character image data storage device) storing
character image data expressing a character as an image;
20 receiving means (a receiving device) for receiving the
character specifying data and the font specifying data
transmitted from the client computer; retrieval means (a
retrieval device) for retrieving, from the first
character image data storage means, character image data
25 expressing a character, which has been specified by the
character specifying data received by the receiving
means, as an image in such a manner that the specified
character will have a font specified by the font

specifying data received by the receiving means;
character image data generating means (a character image
data generating device) for generating the character
image data in response to a situation where the
5 character image data cannot be found in the first
character image data storage means by retrieval
performed by the retrieval means; and character image
data transmitting means (a character image data
transmitting device) for transmitting, to the client
10 computer, character image data generated in the
character image data generating means or character image
data found by retrieval by the retrieval means.

The present invention provides also a method suited
to the above-described system. Specifically, the
15 present invention provides a font sharing method in a
system in which data can be communicated between a
client computer and a server, comprising the steps of
transmitting character specifying data, which specifies
a character, and font specifying data, which specifies a
20 font of the character, from the client computer to the
server; receiving the character specifying data and the
font specifying data at the server; retrieving, at the
server, character image data expressing a character,
which has been specified by the received character
25 specifying data, as an image in such a manner that the
specified character will have a font specified by the
received font specifying data; transmitting the
character image data that has been found from the server

to the client computer; and, in response to a situation where the character image data is not found, generating the character image data and transmitting the generated character image data from the server to the client
5 computer.

In accordance with the present invention, the character specifying data and the font specifying data is transmitted from the client computer to the server. When the character specifying data and the font
10 specifying data is received by the server, the server retrieves character image data representing a character specified by the character specifying data and possessing a font specified by the font specifying data.

If the character image data cannot be found by
15 retrieval, the character image data is generated and the generated character image data is transmitted from the server to the client computer. If the character image data is found by retrieval, the found character image data is transmitted from the server to the client
20 computer.

In accordance with the present invention, the character image data is transmitted from the server to the client computer. Even if the operating system of the client computer is different from that of the
25 server, the character of a font that same as the font of a character represented by character image data generated by the server or character image data found by the server can be obtained at the client computer. In

comparison with a case where outline fonts are sent and received between the client computer and the server, secondary use of fonts is limited. Even if a font has a copyright, therefore, the copyright can be protected.

5 It is preferred that the client computer have means for transmitting, to the server, size designating data representing the size of a character specified by the character specifying data, and that the retrieval means of the server retrieves, from the first character image
10 data storage means, character image data expressing a character, which has been specified by the character specifying data and has a size that has been designated by the size designating data, as an image in such a manner that the specified character will have a font
15 specified by the font specifying data.

Thus, a character having a specified size can be obtained at the client computer.

The client computer may have display control means (a display controller) for controlling a display device
20 in such a manner that a frame of having the size of character represented based upon the size designating data will be displayed on a display screen.

Since a frame having the size of the character is displayed on the display device, the size of the
25 character can actually be viewed.

The client computer further includes second character image data storage means (a second character image data storage device) for storing character image

data representing a character as an image; determination means (a determination device) for determining whether character image data expressing a character as an image has been stored in the second character image data storage means, wherein this character has been specified by the character specifying data, has a font that has been specified by the font specifying data and a size that has been designated by the size designating data; and enlarging/reducing means (an enlarging/reducing device) which, in response to a determination by the determination means to the effect that the character image data has not been stored in the second character image data storage means, is for processing the character image data in such a manner that, of the character image data that has been stored in the second character image data storage means, a character image that has been specified by the character specifying data and has a font that has been specified by the font specifying data will be enlarged or reduced so as to take on a size that has been designated by the size designating data.

Image data representing a character image of a designated size can thus be obtained without sending or receiving character image data between the client computer and server. This makes it possible to lower cost.

It is preferred that the client computer further include font preview data storage determination means (a

font preview data storage determination data) for determining whether font preview data, which is for displaying a representative character having a font specified by the font specifying data, has been stored;

5 display control means for controlling a display device so as to display, on a display screen, the representative character represented by the font preview data in response to a determination by the font preview data storage determination means that the font preview data has been stored; and means (a transmitting device)

10 for transmitting a font preview data transmission request to the server in response to a determination by the font preview data storage determination means that the font preview data has not been stored; and that the

15 server include font preview data transmitting means for transmitting the font preview data to the client computer in response to the font preview data transmission request transmitted from the client computer.

20 Thus, a font possessed by a character represented by received character image data can be viewed by the user of the client computer in advance.

Further, the transmitting means of the client computer transmits, to the server, character string

25 specifying data for specifying a combination of a plurality of characters constructing a character string, and font specifying data for specifying the fonts of the characters constructing the character string. The

receiving means of the server receives the character string data and the font specifying data transmitted from the transmitting means. The retrieval means of the server retrieves, from the first character image data storage means, character image data expressing characters as images, wherein each of these characters, which construct the character string specified by the character string data, and has a font that has been specified by the font specifying data.

10 In this case a character string composed of a plurality of characters can be obtained by the character image data received at the client computer.

Further, the client computer may further include style data transmitting means (a style data transmitting device) for transmitting, to the server, character style designating data for designating style of a character specified by the character specifying data. The server may include designated character-style retrieval means (a designated character style retrieval device) for
15 retrieving, from the first character image data storage means, designated-style character image data expressing, as an image, a character of a style designated by the character style designating data transmitted from the style data transmitting means; designated-style
20 character image data generating means (a designated-style character image data generating device) for
25 generating the designated-style character image data in response to a situation where the designated-style

character image data is not found by the designated character-style retrieval means; and designated-style character image data transmitting means (a designated-style character image data transmitting device) for transmitting, to the client computer, the designated-style character image data generated by the designated-style character image data generating means or the designated-style character image data found by the designated character-style retrieval means.

10 Since the client computer receives the character image data and the designated-style character image data, it is possible to obtain not only a character image having a designated style (bold, italic, shadow, outline, embossed, engraved, superscript, subscript, etc.) but also character images having styles other than the designated styles represented by the character image data. It is easy to generate a character image of another style from character image data of a style other than a designated style.

20 Furthermore, the server may include style information transmitting means (a style information transmitting device) for transmitting, to the client computer, style information for generating the designated-style character image data, and the client
25 computer may further include means (a generating device) for generating the designated-style character image data based upon the style information and the character image data transmitted from the style information transmitting

means.

Thus, it is possible for the client computer to generate the designated-style character image data representing the character image of a designated style
5 from the style information and character image data.

The client computer may further include character image data storage means (a character image data storage device) for storing the character image data transmitted from the character image data transmitting means.

10 The server may further include a printing device and means (a generating device) for generating new character image data, from the character image data that has been designated by the character image data generating means, so as to obtain a character image
15 having a resolution suited to the resolution of the printing device.

If the printing device possessed by the server has a resolution higher than that of a printing device possessed by the client computer, it can print a
20 character image whose resolution is higher than that of a character image printed by the printing device of the client computer. The character image that has been printed would be sent from the operator of the server to the user of the client computer by mail or the like.

25 The present invention further provides a recording medium storing a program for controlling the above-mentioned client computer and a recording medium storing a program for controlling the above-mentioned server.

Other features and advantages of the present invention will be apparent from the following description taken in conjunction with the accompanying drawings, in which like reference characters designate
5 the same or similar parts throughout the figures thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 illustrates the essential components of a font sharing system;

10 Fig. 2 illustrates the electrical construction of a client computer;

Fig. 3 illustrates the electrical construction of a server;

Fig. 4 illustrates a model of an advertisement;

15 Fig. 5 shows the advertisement;

Fig. 6 is a flowchart showing a processing procedure for creating an advertisement;

Fig. 7 illustrates a client computer and a server;

Fig. 8 shows a text editing window;

20 Fig. 9 shows a layout information file;

Figs. 10a and 10b show layout information files;

Fig. 11 illustrates a file of default text attributes;

Fig. 12 shows a font ID table;

25 Figs. 13a and 13b show a bitmap text file;

Fig. 14 shows an example of character images displayed in a text area;

Fig. 15 shows a bitmap font file;

Fig. 16 shows a layout preview file;

Figs. 17 to 19 are flowcharts showing the procedure of text editing processing;

Fig. 20 shows an example of a preview area display;

5 Fig. 21 shows a state in which a line boundary character check (Japanese hyphenation) is not be implemented;

Figs. 22a to 22c show examples of text displayed in a text area;

10 Fig. 23 illustrates a character ornamentation selection window; and

Fig. 24 shows an example of text displayed in a text area.

DESCRIPTION OF THE PREFERRED EMBODIMENT

15 Fig. 1 illustrates the essential components of a font sharing system.

The present invention will be described in regard to a case where an advertisement is created using this font sharing system.

20 The font sharing system comprises a client computer 1 and a server 30 that are capable of communicating data with each other. A client printer 21 having a comparatively low resolution is connected to the client computer 1, and a server printer 31 having a
25 comparatively high resolution is connected to the server 30.

A user employs the client computer 1 to create an advertisement. When the font of a character used in the

advertisement has not been stored in the client computer 1, character image data (a bitmap text file, described later) expressing this character as an image is transmitted from the server 30 to the client computer 1.

5 The advertisement is then created at the client computer 1 using the character expressed by the character image data that has been received. The advertisement is printed by the client printer 21 connected to the client computer 1, or advertisement creating data representing
10 the advertisement is transmitted from the client computer 1 to the server 30 and the advertisement is printed by the server printer 31 connected to the server 30.

Fig. 2 is a block diagram showing the electrical
15 construction of the client computer 1.

The overall operation of the client computer 1 is supervised by a CPU 11.

Connected to the client computer 1 are a modem 2 for through which the computer communicates data with
20 the server 30, a floppy disk (FD) drive 3 for recording data on a floppy disk and reading data that has been recorded on the floppy disk, a compact disk read-only memory (CD-ROM) drive 4 for reading data that has been recorded on a CD-ROM, a mouse 5 and a keyboard 6. Data
25 obtained from these devices 2 to 6 is loaded into the client computer 1 via a system I/O controller 7.

A program for creating an advertisement has been stored on a CD-ROM and is read by the CD-ROM drive 4 so

as to be installed in the client computer 1.

The client computer 1 includes a bus controller 8,
a RAM 9 for storing data temporarily and a ROM 10 for
storing programs and other data that is necessary. A
5 hard disk drive 13 is connected to the client computer 1
via an external I/O controller 12. Data is written to a
hard disk (not shown) and data that has been recorded on
the hard disk is read out by the hard disk drive 13.

A layout information file, a font ID table, a
10 bitmap text file, a bitmap font file and a layout
preview file, which will be described later, are
recorded on the hard disk.

The client computer 1 further includes an interrupt
controller 14, a timer 15, a memory controller 16 and a
15 VRAM 17 for storing image data temporarily in order to
display an image on a display device 19. Image data
that has been recorded in the VRAM 17 is converted to an
analog video signal by being applied to a digital/analog
converter 18. The analog video signal is applied to the
20 display device 19, whereby the image is displayed on the
display screen of the display device 19.

The client printer 21 connected to the client
computer 1 is controlled by a printer control circuit
20.

25 Fig. 3 is a block diagram showing the electrical
construction of the server 30.

The server 30 has a construction identical with
that of the client computer 1. The circuits

constructing the server 30 that are the same as those constructing the client computer 1 are identified by like reference characters and need not be described again. The server 30 differs from the client computer 1 in that the high-resolution server printer 31 is connected thereto, as mentioned earlier.

Fig. 4 illustrates a model for the purpose of creating an advertisement.

Areas A1 to A5 are formed in the model of the advertisement. An illustration represented by image data is pasted in the area A1, character images of the name of a business establishment represented by character image data are pasted in the area A2, character images of an introductory passage represented by character image data is pasted in the area A3, a map represented by image data is pasted in the area A4, and character images of an address and business hours represented by character image data are pasted in the area A5. The areas A2, A3 and A5 in which the character images (characters in the form of images expressed by the character image data) are pasted shall be referred to as text pasting areas, and the areas A1 and A4 in which pictures (images) are pasted shall be referred to as image pasting areas.

An advertisement of the kind shown in Fig. 5 is created by pasting illustrations and the like in the areas of the model depicted in Fig. 4.

Fig. 6 is a flowchart showing a processing

procedure for creating an advertisement.

The user first creates the advertisement model shown in Fig. 4. When the model shown in Fig. 4 is created by the user, areas for pasting pictures or
5 character images are selected from among the areas A1 to A5 in the created model (step 91).

If a selected area is area A1 or A4 in which a picture is pasted (step 92), an image file (which has been stored on the hard disk) containing the image data
10 expressing the pasted picture is designated (step 93). When the image file is designated, the image expressed by the image data that has been stored in this image file is pasted in the designated area A1 or A4 (step 94). It goes without saying that the image may be
15 enlarged or reduced in size in dependence upon the size of the area.

If the selected area is area A2, A3 or A5 for pasting the character images (step 95), text editing processing is executed (step 96). In text editing
20 processing, data is communicated with the server 30 and the server 30 generates character image data (step 111). This text editing processing, which will be described later, provides character image data that expresses characters and images. The character images expressed
25 by the character image data are pasted in the selected area A2, A3 or A5 (step 97).

The processing of steps 91 to 97 is repeated until the pasting of pictures or character images in all areas

A1 to A5 of the model created beforehand is completed ("YES" at step 98).

Next, whether the advertisement is to be printed by the client printer 21 connected to the client computer 1 or by the server printer 31 connected to the server 30 is decided by the user of the client computer 1 (step 99). In a case where the advertisement is to be printed using the client printer 21, the data for creating the advertisement is applied to the client printer 21 and is printed thereby (step 100). If the advertisement is to be printed using the server printer 31 connected to the server 30, the data for creating the advertisement is transmitted from the client computer 1 to the server 30 (step 102). If the data for creating the advertisement is received, high-resolution character image data is generated at the server 30 to create a high-resolution advertisement (step 112) and advertisement creating data which supports the resolution of the server printer 31 is generated again (step 113).

The advertisement creating data thus regenerated is applied to the server printer 31 of the server 30 and the high-resolution advertisement is printed thereby (step 114). When the advertisement has been printed, the printed advertisement is mailed to the user of the client computer 1 by the operator of the server 30 (step 115).

Text editing processing (the processing of step 96 in Fig. 6) will be described next. Here a case where

character images are pasted in the areas shown in Figs. 4 and 5 will be described.

When the advertisement model is created and an area (here the area A2) in which character images are pasted is selected in the manner described above, control proceeds to the text editing processing.

Fig. 7 illustrates the relationship between the client computer 1 and the server 30.

In text editing processing, a layout information file (see Figs. 9, 10a, 10b) is created by the user of the client computer 1. The created layout information file is transmitted from the client computer 1 to the server 30.

On the basis of the layout information file, the server 30 creates a bitmap text file (see Figs. 13a, 13b) in which character image data has been stored. The created bitmap text file is transmitted from the server 30 to the client computer 1.

Upon receiving the bitmap text file, the client computer 1 reads out the character image data that has been stored in the bitmap text file. The character images expressed by the character image data that has been read out are pasted in the area A2.

Further details of text editing processing will become apparent from the description that follows.

First, a text editing window shown in Fig. 8 is displayed on the display screen of the display device 19 of the client computer 1.

The text editing window includes an area A11 for selecting the font of a character image to be pasted in an area; an area A12 which displays the size of a character image to be pasted in an area; an area A13 for selecting the size of this character image; an area A14 for designating the style of a character image (in this embodiment, bold, italic, superscript, subscript, shadow and outline can be designated as character styles); a font preview area A15 for displaying, in regard to representative characters, the font that has been designated by the font selection area A11; a text input display area A16 which displays characters entered by the user of the client computer 1; a preview area A17 in which the layout of characters to be pasted in an area is displayed by frames in accordance with the sizes of the characters, and which is for previewing character images; an area A18 clicked on by the user of the client computer 1 when frames are displayed in the preview area A17; an area A19 clicked on by the user of the client computer 1 when character image data expressing character images is downloaded from the server 30; an area A21 clicked on by the user of the client computer 1 when character images are finally pasted in a selected area of the model; and an area A22 clicked by the user of the client computer 1 when the user wishes to cancel an entry. It goes without saying that a return key on the keyboard 6 is pressed when a new line is started in the text input display area A16.

Fig. 9 illustrates the format of the layout information file created by the user of the client computer 1.

The layout information file includes a text area
5 size recording area which stores data representing the
size of an area selected by the user; a character count
recording area which stores data representing the number
of characters of character images entered in a text
pasting area selected by the user (in a case where the
10 return key is pressed, this event is counted as one
word); and a text area for storing data representing a
character to be entered in an area.

The layout information file further includes a text
attribute area and a character attribute list area.

15 The text attribute area includes areas for storing
data representing the alignment of entered text (whether
a character string is to be centered, justified left or
justified right), character spacing, line spacing, a
list of characters forbidden at the beginning of a line
20 (e.g., a punctuation mark), and a list of characters
forbidden at the end of a line (e.g., a left
parenthesis). Data that is stored in the text attribute
area may be determined in advance in the manner shown in
Fig. 11.

25 The character attribute list includes a font
attribute area, a size attribute area and a style
attribute area.

The font attribute area is an area for storing font

IDs which designate the fonts of entered characters. A font ID table of the kind shown in Fig. 12 is stored in the client computer 1 and server 30 beforehand. The font of a character image is specified by specifying the font ID. The size attribute area is an area for storing data which designates the size of an entered character. The style attribute area is an area for storing data which designates the style of an entered character. These items of data are stored in the respective areas in correspondence with the entered characters.

Figs. 10a and 10b illustrate the manner in which the data has been stored in the layout information file. Fig. 10a shows the initial state. Here data has been stored only in the text area size and text attribute area. Fig. 10b illustrates the final state, in which data has been stored.

In the example shown in Fig. 10b, the nine words "Den European-style Beer Restaurant DEN" have been entered in the selected text information area A2. The return key has been pressed between "Den" and "European-style Beer Restaurant" and between "European-style Beer Restaurant" and "DEN" to start new lines. A font (Fujimaru Comic; see Fig. 12) represented by "FC0023" has been designated for the first word (Den), a font (Fujimaru Block; see Fig. 12) represented by "FK001" has been designated for the next three words (European-style Beer Restaurant), and a font (Fujimaru Gothic; see Fig. 12) represented by "FG002" has been designated for the

last word (DEN). A size represented by "84" has been designated for the first word, a size represented by "32" has been designated for the next three words, and a size represented by "54" has been designated for the last word. In the example shown in Fig. 10b, a style has not been designated in regard to any of the entered characters.

This layout information file is generated in text editing processing by the user of the client computer 1 and is recorded on the hard disk of the client computer 1.

Fig. 13a shows the format of a bitmap text file generated at the server 30, and Fig. 13b illustrates a bitmap text file in which specific data has been stored.

The bitmap text file includes an area (text area size) for storing data which represents the size (represented by number of pixels in the vertical direction and number of pixels in the horizontal direction) of a selected text pasting area; an area (display bitmap image) for storing character image data expressing character images to be pasted to the size of the selected text pasting area; an area (word count) for storing data which represents the number of characters constructing character images to be pasted in a selected text pasting area; an area (line count) for storing data which represents the number of lines of characters constructing character images to be pasted in a selected text pasting area; and a text recording area (text) for

storing data which represents characters entered by the user.

The bitmap file further includes a text attribute area and a character attribute list area similar to
5 those of the layout information file.

Data stored in the text attribute area is the same as data stored in the above-mentioned layout information file and need not be described again. Data stored in the text attribute area is copied from the data that has
10 been stored in the layout information file.

The character attribute list area includes, in addition to the font attribute area, size attribute area and style attribute area contained in the layout information file, a baseline attribute area, an
15 arrangement attribute area, an area attribute area and an original attribute area. Data stored in the font attribute area, size attribute area and style attribute area is the same as the data stored in the layout information file and need not be described again. Data
20 stored in the font attribute area, size attribute area and style attribute area of the bitmap text file is copied from the data that has been stored in the layout information file.

Data stored in the baseline attribute area,
25 arrangement attribute area and area attribute area is data representing the pasting position of characters pasted as images of a selected text area and data stipulating the sizes of characters.

Fig. 14 shows the selected text pasting area A2. Character images appear in this text pasting area at the pasting positions.

Data stored in the baseline attribute area

5 represents, on a per-line basis, reference positions below the characters constructing the character images pasted in the text pasting area that has been selected. Since character images spanning three lines are pasted in the selected text pasting area in this embodiment,

10 each of the items of data representing the reference positions of the three lines is stored in the baseline attribute area. By taking the point at the upper left of a text area as the origin (0,0), a reference position is expressed by the number of pixels from the origin in

15 the vertical (Y) direction. For example, the characters constituting the first line are regulated in such a manner that the baseline of the characters will be situated at a position that is 92 pixels distant from the origin in the vertical direction. The characters

20 constituting the second line are regulated in such a manner that the baseline of the characters is situated at a position that is 120 pixels distant from the origin in the vertical direction. The characters constituting the third line are regulated in such a manner that the

25 baseline of the characters is situated at a position that is 180 pixels distant from the origin in the vertical direction.

Data stored in the arrangement attribute area

indicates the positions of the characters constructing the character images pasted in the text pasting area that has been selected. In a case where each character is enclosed by a frame corresponding to the size of the character, the position of the character is indicated by the position (number of pixels in the x direction and number of pixels in the y direction) of the point at the upper left of the frame. For example, by taking the point at the upper left of the text pasting area as the origin (0,0), the position of the character "D" among the character images pasted in the selected text area is regulated in such a manner that the point at the upper left of the frame will be situated at the position (161,18). If the character is the character "e", its position is regulated in such a manner that the point at the upper left of the frame will be situated at the position (225,32).

Data stored in the area attribute area indicates the size of each character constructing character images pasted in the text area. In a case where each character is enclosed by a frame corresponding to the size of the character, size is indicated by the horizontal width and vertical length of the frame. For example, if the character among the character images pasted in the selected text area is the character "D", size is stipulated by a horizontal width of 64 (= 225 - 161) pixels and a vertical length of 74 (= 92 - 18) pixels.

When a style designating flag for style designation

has been stored in the style attribute area so as to obtain a prescribed style, data expressing a character image of a style represented by the data that has been stored in this style attribute area is stored in the display bitmap image area. However, if the client computer 1 possesses image data representing not only character images of specific styles but also character images having standard styles (the Ming-style typeface, Gothic typeface, etc.), a character image having a style different from that of the standard character image can be generated with relative ease from the image data expressing the standard character image. To accomplish this, in a case where a style designation has been made by the user of the client computer 1, image data representing the standard image, in addition to the image data representing the image of the designated style, is transmitted from the server 30 to the client computer 1 as original image data. The area which stores the original image data is the original attribute area.

This bitmap text file is generated by the server 30.

Fig. 15 illustrates the format of a bitmap font file.

The bitmap font file is generated from the bitmap text file.

The bitmap font file includes a display bitmap image area, a text recording area and a character

attribute area. Data representing the font ID, data
representing size, data representing a style flag and
data representing a baseline is stored in the character
attribute area. Further, when data representing an
5 original image is present, the data representing this
original image is stored as well.

Fig. 16 illustrates the format of the layout
preview file.

The layout preview file indicates the layout in the
10 preview area A17 shown in Fig. 8. This layout preview
file is generated from the bitmap text file transmitted
from the server 30.

The layout preview file includes a text area size
recording area, a word count recording area, a line
15 count recording area, a text recording area and a
character attribute list area. The character attribute
list includes a baseline attribute area, an arrangement
attribute area and an area attribute area.

Figs. 17 to 19 are flowcharts illustrating the
20 procedure of text editing processing (the processing of
step 96 in Fig. 6).

First, a request of a list of font names is
transmitted from the client computer 1 to the server 30
(step 41).

25 Upon receiving the request for the list of font
names from the client computer 1, the server 30 responds
by transmitting data representing the list of font names
to the client computer 1 (step 71). When data

representing the list of font names has already been stored in the client computer 1, the processing of steps 41 and 71 is skipped.

Upon receiving the data representing the list of
5 font names, the client computer 1 displays the font names as a list in the area A11 based upon the data received. The user of the client computer 1 selects the desired font from the fonts displayed in the area A11 (step 42).

10 It is determined whether font preview data which appears in regard to a typical character having a selected font has been stored on the hard disk of the client computer 1 (steps 43, 44).

If font preview data corresponding to the selected
15 font has not been stored on the hard disk of the client computer 1 ("NO" at step 44), then a request for the font preview data is transmitted from the client computer 1 to the server 30 (step 45).

Upon receiving the request for the font preview
20 data transmitted from the client computer 1, the server 30 responds by transmitting the corresponding font preview data from the server 30 to the client computer 1 (step 72).

Upon receiving the font preview data transmitted
25 from the server 30, the client computer 1 records this data on the hard disk (step 46).

In any case, the font represented by the font preview data is displayed in the area A15. The user of

the client computer 1 views the displayed font and, if it is acceptable, control proceeds to the next processing step. If the font is not acceptable to the user, then processing is repeated from step 42 ("NO" at
5 step 47).

A character (character string) to be displayed in the selected text pasting area is entered using the keyboard 6 of the client computer 1. When the character is entered, the entered character is displayed in the
10 text input display area A16. Further, the size of each entered character is selected from the sizes displayed in the area A13. The size selected is displayed in the area A12. If necessary, a style being displayed in the area A14 is designated. The box to the left of the
15 designated style is checked (step 48 in Fig. 18). As a result of these operations, the layout information file (see Figs. 8, 9a and 9b) is created.

When text is thus entered, control shifts to layout preview processing or character image display
20 processing.

If the area A18 is clicked on by the user of the client computer 1, control proceeds to layout preview processing (step 49). If the area A19 is clicked on by the user of the client computer 1, then control proceeds
25 to character image display processing (step 56).

A case where the area A18 is clicked on to shift to layout preview processing will be described first.

When control proceeds to layout preview processing,

first reference is had to the bitmap font file that has been recorded on the hard disk (step 50). It is determined whether all of the character image data expressing characters having fonts, sizes and styles
5 designated by the user and that has been entered by the user has been stored in the bitmap font file recorded on the hard disk (step 51).

If there is character image data that has not been stored in the bitmap font file, the layout information
10 file that was generated by the character input processing of step 48 and a request for preview information are transmitted from the client computer 1 to the server 30 (step 52).

Upon receiving the layout information file and
15 preview information request from the client computer 1, the server 30 analyzes the layout information file that has been received (step 73 in Fig. 19). It is determined, in conformity with the results of analysis, whether a bitmap font file corresponding to the received
20 layout information file has been recorded on the hard disk of the server 30 (step 75).

If a corresponding bitmap font file has not been recorded on the hard disk of the server 30, the corresponding bitmap file is generated based upon the
25 received layout information (step 76). The generated bitmap font file is recorded on the hard disk of the server 30 (step 77).

A bitmap text file also is generated (step 78).

Since a request for transmission of the layout preview information has been issued in this case ("YES" at step 79), the layout preview file is generated and the generated layout preview file is transmitted from the server 30 to the client computer 1 (step 81).

Upon receiving the layout preview file transmitted from the server 30 (step 53 in Fig. 18), the client computer 1 generates data for display in the layout area A17 based upon the bitmap font file recorded on the hard disk of the client computer 1 or layout preview file transmitted from the server 30 (step 54). On the basis of the generated data, frames the number of which agrees with the number of entered characters and which have the sizes of the character sizes set by the user of the client computer 1 are displayed (step 55; see area A17 in Fig. 8).

Since frames conforming to the set sizes are displayed in the preview area A17 in a number corresponding to the number of entered characters, the user can tell what appearance the entered text will have when it is displayed. Of course, when a bitmap file of each character constituting text entered by the user of the client computer 1 has been recorded on the hard disk of the client computer 1, the characters may be displayed in the preview area A17 using the designated fonts, as shown in Fig. 20, without displaying frames.

Character image display processing will be displayed next.

If the area A19 is clicked on by the user of the client computer 1, control shifts to character image display processing (step 56 in Fig. 18).

Reference is had to the bitmap font file that has
5 been recorded on the hard disk of the client computer 1
(step 57). It is determined whether all of the
character image data expressing characters having fonts,
sizes and styles designated by the user and that
constitutes text that has been entered by the user has
10 been stored in the bitmap font file recorded on the hard
disk (step 58).

If there is character image data that has not been
stored in the bitmap font file, the layout information
file that was generated by the character input
15 processing of step 48 and a request for a bitmap text
file are transmitted from the client computer 1 to the
server 30 (step 59).

Upon receiving the layout information file and
request for the bitmap text file from the client
20 computer 1, the server 30 analyzes the layout
information file that has been received (step 73 in Fig.
19). It is determined, in conformity with the results
of analysis, whether a bitmap font file corresponding to
the received layout information file has been recorded
25 on the hard disk of the server 30 (step 75).

If a corresponding bitmap font file has not been
recorded on the hard disk of the server 30, the
corresponding bitmap file is generated based upon the

received layout information (step 76). The generated bitmap font file is recorded on the hard disk of the server 30 (step 77).

5 A bitmap text file also is generated (step 78). If generation of the bitmap text file at the layout preview processing has been completed, then the processing of step 78 is skipped, as a matter of course.

10 Since a request for transmission of the bitmap text file has been issued in this case ("NO" at step 79), the bitmap text file is generated and then transmitted from the server 30 to the client computer 1 (step 80).

15 The bitmap text file transmitted from the server 30 is received by the client computer 1 (step 61). The bitmap text file that has been received is recorded anew on the hard disk of the client computer 1 (step 62). If all bitmap fonts are already on the hard disk of the client computer 1 ("YES" at step 58), then the client computer 1 generates the bitmap text file based upon the bitmap font file.

20 In any case, characters having fonts set by the user of the client computer 1 are displayed in the preview area A17 at the designated sizes and in the designated styles (step 63). The user of the client computer 1 views the character images and, if they are acceptable, clicks on the area A21 ("YES" at step 64).
25 As a result, the character images displayed in the preview area are pasted in the selected text area (step 65).

Though a line boundary character check (Japanese hyphenation) has not been designated in the above-described processing, such processing may be designated if desired.

5 Fig. 21 shows the appearance of text in a case a line boundary character check (Japanese hyphenation) has not been designated. If this processing has not been designated, characters are displayed in accordance with the character order regardless of the types of symbols
10 used. As a consequence, occasions arise in which a punctuation mark appears at the beginning of a line or a left parenthesis appears at the end of a line. Characters one does not wish to appear at the beginning of a line are stored in the list (located in the layout
15 information file) of characters forbidden at the beginning of a line, and characters one does not wish to appear at the end of a line are stored in the list (located in the layout information file) of characters forbidden at the end of a line. In a case where a
20 character contained in these lists appears at the beginning or end of a line, a line boundary character check, such as narrowing or widening the spacing between characters, is executed. A character in the list of
25 characters forbidden at the beginning of a line is thus prevented from appearing at the beginning of a line, and a character in the list of characters forbidden at the end of a line is prevented from appearing at the end of a line.

Figs. 22a, 22b and 22c illustrate examples of text entered in the text area.

In a case where the size of characters set by the user of the client computer 1 is too large, not all of the characters will fit in the text area, as shown in Fig. 22a. In this case data is communicated between the client computer 1 and server 30 and the characters are reduced in size until they fit within the text area.

However, this is disadvantageous in that sending and receiving data between the client computer 1 and server 30 a number of times results in higher communication costs. Accordingly, an arrangement may be adopted in which character images of a size commensurate with the text area are obtained by reducing or enlarging the character images represented by the display bitmap images of the bitmap text file stored on the hard disk of the client computer 1. The reduction or enlargement processing would be executed by the CPU 11 of the client computer 1.

Furthermore, rather than merely changing the style of each character constituting a character image, character ornamentation processing for changing the shape of the entire character image (character string) may be executed. In this case, a character ornamentation selection window of the kind shown in Fig. 23 is displayed on the display screen of the display device 19 of the client computer 1 when character image display processing is executed at the client computer 1.

Here the user is allowed to select the desired character ornamentation. The data representing the selected character ornamentation is transmitted from the client computer 1 to the server 30.

5 Upon receiving the character ornamentation, the server 30 subjects the character image to character ornamentation processing based upon the data representing the character ornamentation that has been designated. Data representing the character image that
10 has undergone character ornamentation processing is transmitted from the server 30 to the client computer 1. In this case also it goes without saying that data expressing a standard character image is transmitted from the server 30 to the client computer 1 and not just
15 the character image that has been ornamented. Of course, the data expressing the standard character image need not necessarily be transmitted from the server 30 to the client computer 1

Fig. 24 illustrates an example of character strings
20 whose characters have been ornamented.

As many apparently widely different embodiments of the present invention can be made without departing from the spirit and scope thereof, it is to be understood that the invention is not limited to the specific
25 embodiments thereof except as defined in the appended claims.

WHAT IS CLAIMED IS:

1. A font sharing system in which data can be communicated between a client computer and a server, wherein said client computer includes means for
- 5 transmitting character specifying data, which specifies a character, and font specifying data, which specifies a font of the character, to said server; and said server includes:
 - first character image data storage means storing
 - 10 character image data expressing a character as an image; receiving means for receiving the character specifying data and the font specifying data transmitted from said client computer;
 - retrieval means for retrieving, from said first
 - 15 character image data storage means, character image data expressing a character, which has been specified by the character specifying data received by said receiving means, as an image in such a manner that the specified character will have a font specified by the font
 - 20 specifying data received by said receiving means; |
 - character image data generating means for generating the character image data in response to a situation where the character image data cannot be found in said first character image data storage means by
 - 25 retrieval performed by said retrieval means; and
 - character image data transmitting means for transmitting, to said client computer, character image data generated by said character image data generating

means or character image data found by retrieval by said retrieval means.

2. The system according to claim 1, wherein said client computer further includes means for transmitting, to
5 said server, size designating data representing the size of a character specified by said character specifying data; and

said retrieval means of said server retrieves, from said first character image data storage means, character
10 image data expressing a character, which has been specified by the character specifying data and has a size that has been designated by the size designating data, as an image in such a manner that the specified character will have a font specified by the font
15 specifying data.

3. The system according to claim 2, wherein said client computer further includes display control means for controlling a display device in such a manner that a frame having the size of a character represented on the
20 basis of the size designating data will be displayed on a display screen.

4. The system according to claim 2, wherein said client computer further includes:

second character image data storage means for
25 storing character image data expressing a character as an image;

determination means for determining whether character image data expressing a character as an image

has been stored in said second character image data storage means, wherein said character has been specified by the character specifying data, has a font that has been specified by the font specifying data and a size that has been designated by the size designating data;
5 and

enlarging/reducing means which, in response to a determination by said determination means to the effect that the character image data has not been stored in
10 said second character image data storage means, is for processing the character image data in such a manner that, of character image data that has been stored in said second character image data storage means, a character image that has been specified by the character
15 specifying data and has a font that has been specified by the font specifying data will be enlarged or reduced so as to take on a size that has been designated by the size designating data.

5. The system according to claim 1, wherein said client
20 computer includes:

font preview data storage determination means for determining whether font preview data, which is for displaying a representative character having a font specified by the font specifying data, has been stored;
25 display control means for controlling a display device so as to display, on a display screen, the representative character represented by the font preview data in response to a determination by said font preview

data storage determination means that the font preview data has been stored; and

means for transmitting to the server a request to transmit the font preview data in response to a

5 determination by said font preview data storage determination means that the font preview data has not been stored; and

said server further includes font preview data transmitting means for transmitting the font preview
10 data to said client computer in response to the font preview data transmission request transmitted from said client computer.

6. The system according to claim 1, wherein said transmitting means of said client computer transmits, to
15 the server, character string specifying data for specifying a combination of a plurality of characters constructing a character string, and font specifying data for specifying fonts of the characters constructing the character string;

20 said receiving means of said server receives the character string data and the font specifying data transmitted from said transmitting means; and

said retrieval means of said server retrieves, from said first character image data storage means, character
25 image data expressing characters as images, wherein each of these characters, which construct the character string specified by the character string data, has a font that has been specified by the font specifying

data.

7. The system according to claim 1, wherein said client computer further includes style data transmitting means for transmitting, to the server, character style
5 designating data for designating style of a character specified by the character specifying data; and

said server includes:

designated character-style retrieval means for retrieving, from said first character image data storage
10 means, designated-style character image data expressing, as an image, a character of a style designated by the character style designating data transmitted from said style data transmitting means;

designated-style character image data generating
15 means for generating the designated-style character image data in response to a situation where the designated-style character image data is not found by said designated character-style retrieval means; and

designated-style character image data transmitting
20 means for transmitting, to said client computer, the designated-style character image data generated by said designated-style character image data generating means or the designated-style character image data found by said designated character-style retrieval means.

25 8. The system according to claim 7, wherein said server further includes style information transmitting means for transmitting, to said client computer, style information for generating the designated-style

character image data; and

said client computer further includes means for
generating the designated-style character image data
based upon the style information and the character image
5 data transmitted from said style information
transmitting means.

9. The system according to claim 1, wherein said client
computer further includes character image data storage
means for storing the character image data transmitted
10 from said character image data transmitting means.

10. The system according to claim 1, wherein said
server includes:

a printing device; and

means for generating new character image data, from
15 the character image data that has been designated by
said character image data generating means, so as to
obtain a character image having a resolution suited to
the resolution of said printing device.

11. A client computer capable of communicating data
20 with a server, comprising:

means for transmitting character specifying data,
which specifies a character, and font specifying data,
which specifies a font of the character, to said server;
and

25 receiving means for receiving character image data
expressing a character, which has been transmitted from
said server and specified by the character specifying
data, as an image in such a manner that the specified

character will have a font specified by the font specifying data.

12. A server capable of communicating data with a client computer, comprising:

- 5 character image data storage means storing character image data expressing a character as an image; receiving means for receiving character specifying data, which specifies a character, and font specifying data, which specifies a font of the character,
- 10 transmitted from said client computer; retrieval means for retrieving, from said character image data storage means, character image data expressing a character, which has been specified by the character specifying data received by said receiving
- 15 means, as an image in such a manner that the specified character will have a font specified by the font specifying data received by said receiving means; character image data generating means for generating the character image data in response to a
- 20 situation where the character image data cannot be found in said character image data storage means by retrieval performed by said retrieval means; and character image data transmitting means for transmitting, to said client computer, character image
- 25 data generated by said character image data generating means or character image data found by retrieval by said retrieval means.

13. A method of sharing fonts in a system in which data

can be communicated between a client computer and a server, comprising the steps of:

transmitting character specifying data, which specifies a character, and font specifying data, which specifies a font of the character, from the client
5 computer to the server;

receiving the character specifying data and the font specifying data at the server;

retrieving, at the server, character image data
10 expressing a character, which has been specified by the received character specifying data, as an image in such a manner that the specified character will have a font specified by the received font specifying data;

transmitting the character image data that has been
15 found from the server to the client computer;

in response to a situation where the character image data is not found, generating the character image data; and

transmitting the generated character image data
20 from the server to the client computer.

14. The method according to claim 13, further comprising the steps of:

transmitting, from the client computer to the server, size designating data representing the size of a
25 character specified by said character specifying data; and

retrieving, at the server, character image data expressing a character, which has been specified by the

character specifying data and has a size that has been designated by the size designating data, as an image in such a manner that the specified character will have a font specified by the font specifying data.

5 15. The method according to claim 14, wherein said client computer displays, on a display screen, a frame having the size of a character represented on the basis of the size designating data.

16. The method according to claim 13, further
10 comprising a step of transmitting, from the client computer to the server, character string specifying data for specifying a combination of a plurality of characters constructing a character string, and font specifying data for specifying fonts of the characters
15 constructing the character string;

receiving, at the server, the character string data and the font specifying data transmitted from the client computer; and

retrieving, at the server, character image data
20 expressing characters as images, wherein each of these characters, which construct the character string specified by the character string data, has a font that has been specified by the font specifying data.

17. A method of controlling the operation of a client
25 computer capable of communicating data with a server, comprising the steps of:

transmitting character specifying data, which specifies a character, and font specifying data, which

specifies a font of the character, to the server; and

receiving character image data expressing a
character, which has been transmitted from the server
and specified by the character specifying data, as an
5 image in such a manner that the specified character will
have a font specified by the font specifying data.

18. A method of controlling the operation of a server
capable of communicating data with a client computer,
comprising the steps of:

10 receiving character specifying data, which
specifies a character, and font specifying data, which
specifies a font of the character, transmitted from the
client computer;

retrieving character image data expressing a
15 character, which has been specified by the received
character specifying data, as an image in such a manner
that the specified character will have a font specified
by the font specifying data;

generating the character image data in response to
20 a situation where the character image data cannot be
found; and

transmitting, to the client computer, character
image data that has been generated or character image
data that has been found.

25 19. A recording medium storing a program for
controlling a client computer capable of communicating
data with a server, said program:

causing the server to transmit character specifying

data, which specifies a character, and font specifying data, which specifies a font of the character, to the server; and

controlling the client computer so as to receive
5 character image data expressing a character, which has been transmitted from the server and specified by the character specifying data, as an image in such a manner that the specified character will have a font specified by the font specifying data.

10 20. A server-readable recording medium storing a program for controlling a server capable of communicating data with a client computer, said program:

causing the server to receive character specifying data, which specifies a character, and font specifying
15 data, which specifies a font of the character, transmitted from the client computer;

causing the server to retrieve character image data expressing a character, which has been specified by the received character specifying data, as an image in such
20 a manner that the specified character will have a font specified by the font specifying data;

causing the server to generate the character image data in response to a situation where the character image data cannot be found; and

25 controlling the server so as to transmit, to the client computer, character image data that has been generated or character image data that has been found.

ABSTRACT OF THE DISCLOSURE

A client computer and a server share fonts in an efficient manner. The client computer and server are capable of communicating data with each other.

- 5 Character specifying data for specifying a character and a font ID for specifying the font of this character are stored in a layout information file and transmitted from the client computer to the server. On the basis of a layout information file, the server retrieves character
- 10 image data (a bitmap text file) expressing the character as an image. The server transmits the found character image data to the client computer. When character image data cannot be found, the character image data is generated and is then transmitted from the server to the
- 15 client computer.

Fig. 1

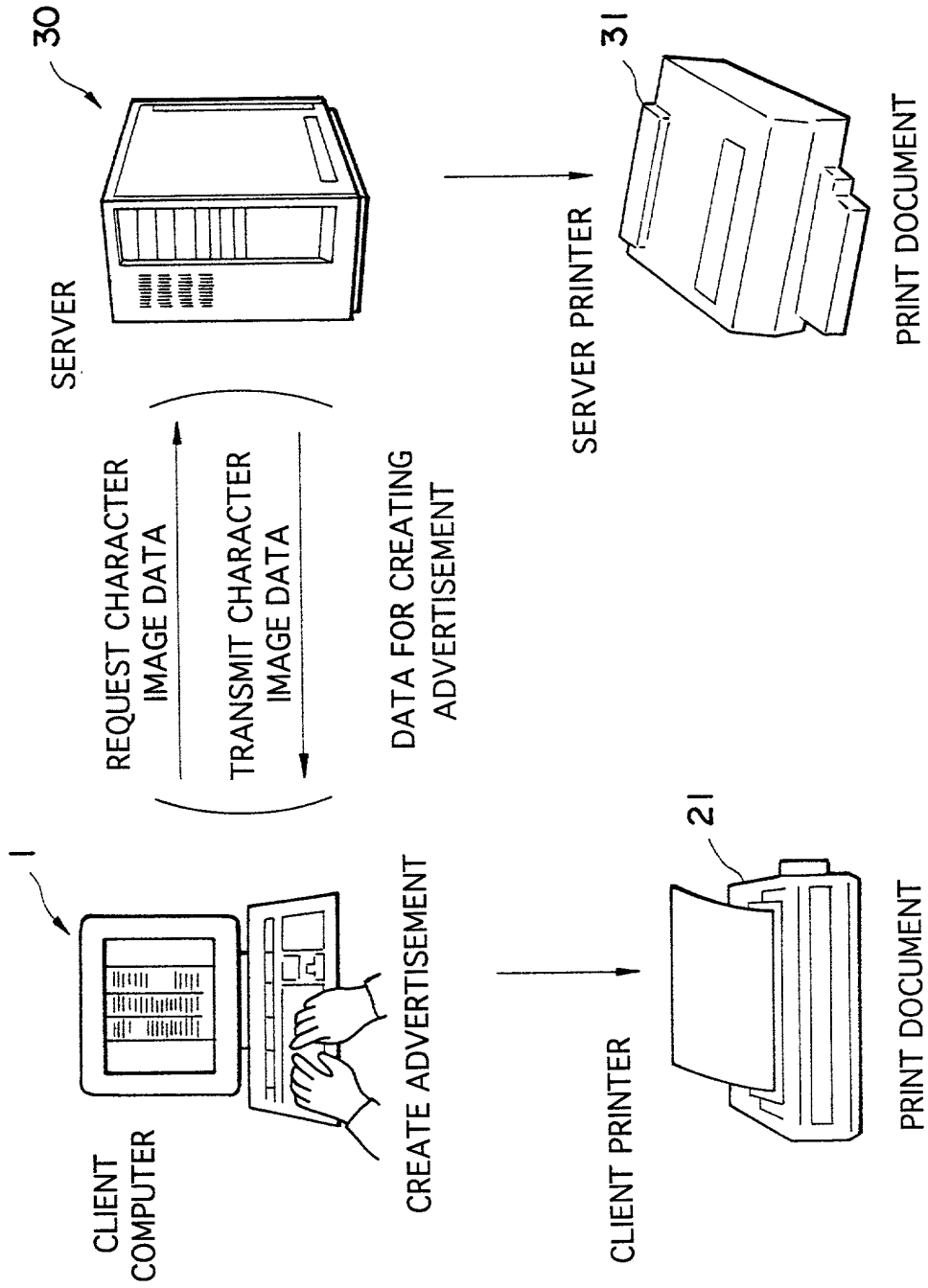


Fig. 2

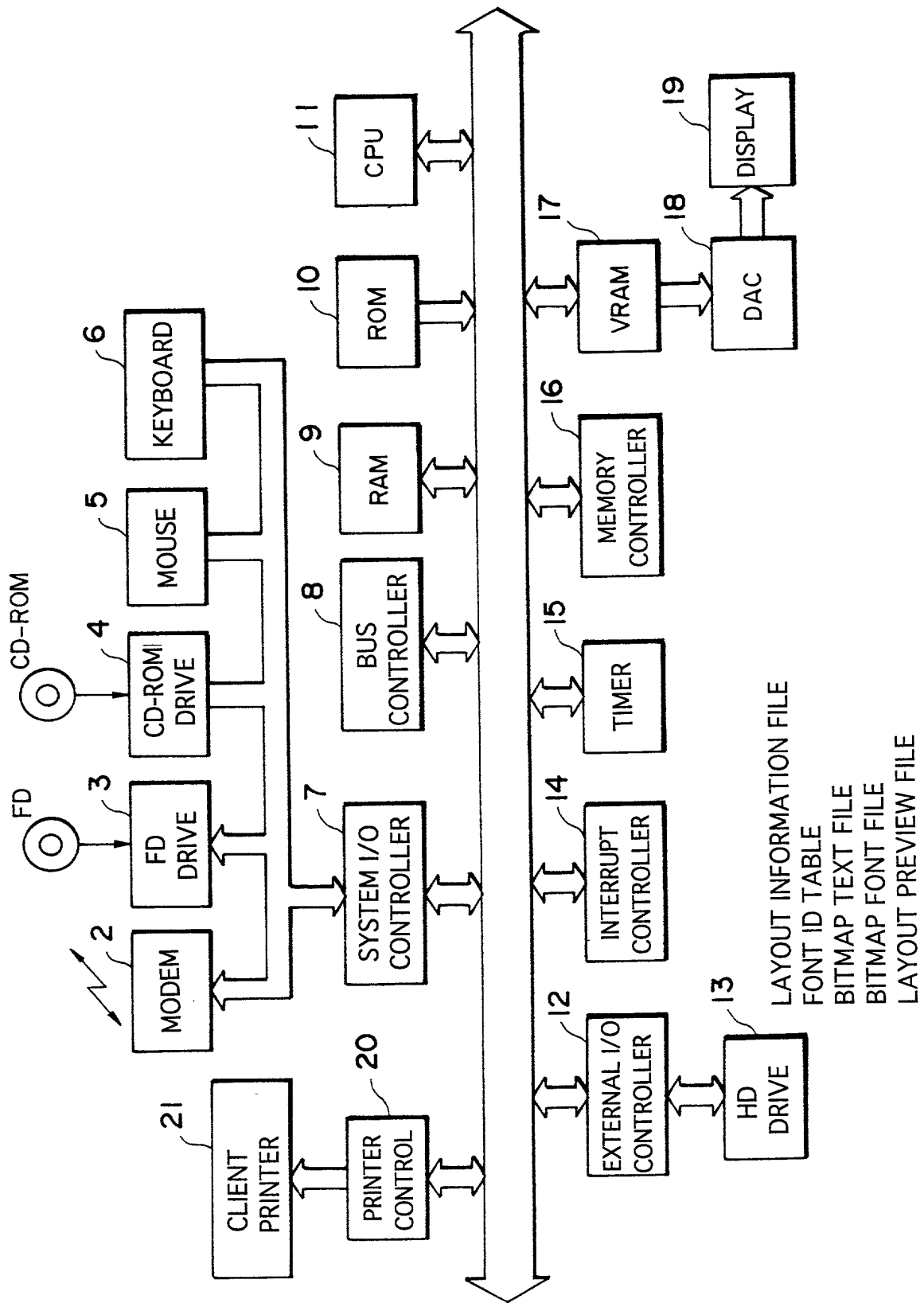


Fig. 3

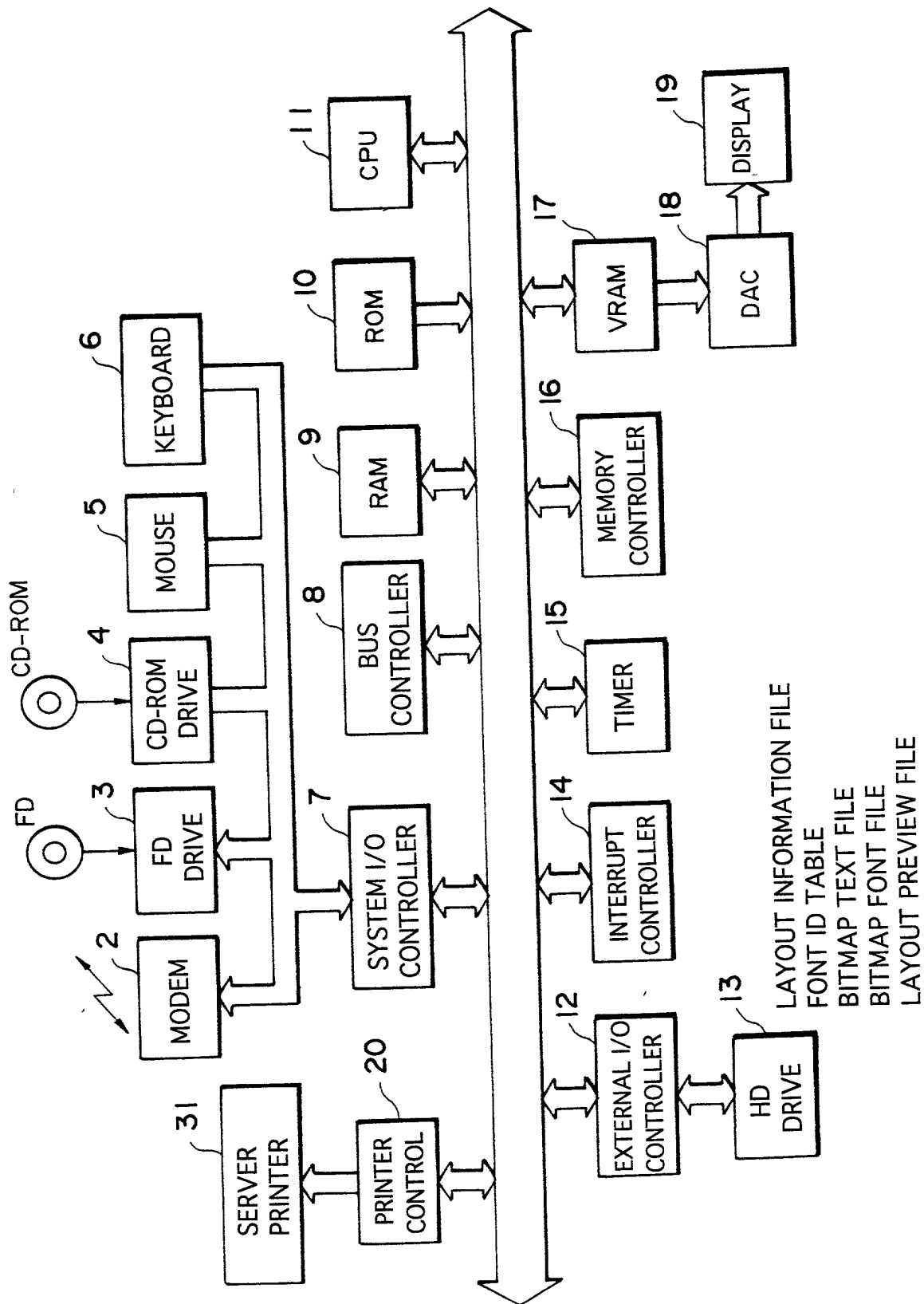


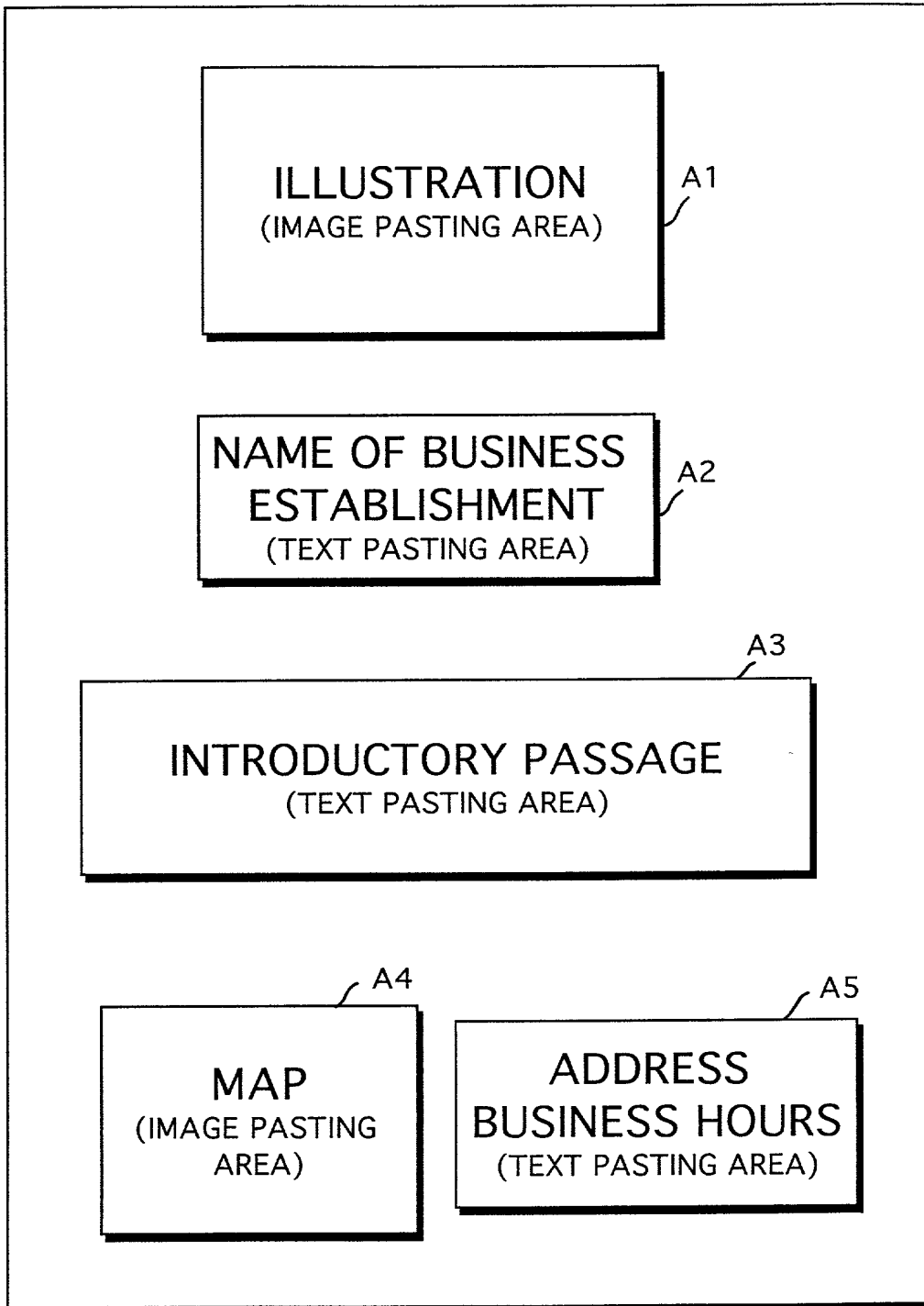
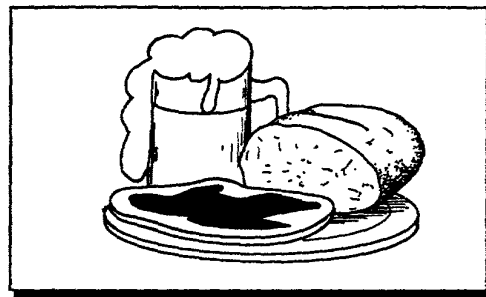
Fig. 4

Fig. 5

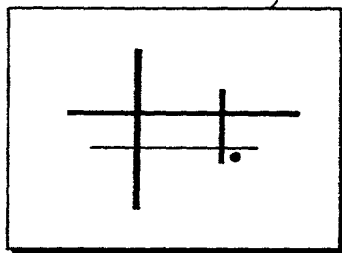
A1

Den
European-style Beer Restaurant
DEN

A2

In English, the word "Den" stands for "cellar" or a lair where animals live, but it can also mean a comfortable room in which to relax. Spend some time relaxing at the Den this evening.

A3



A4

0-0-0 Minami Aoyama, Minato-ku, Tokyo

TEL: 03-0XXX-0000
FAX: 03-0XXX-XXXX

BUSINESS HOURS: 11:00 AM - 10:30 PM

CLOSED ON SECOND AND
THIRD WEDNESDAYS

A5

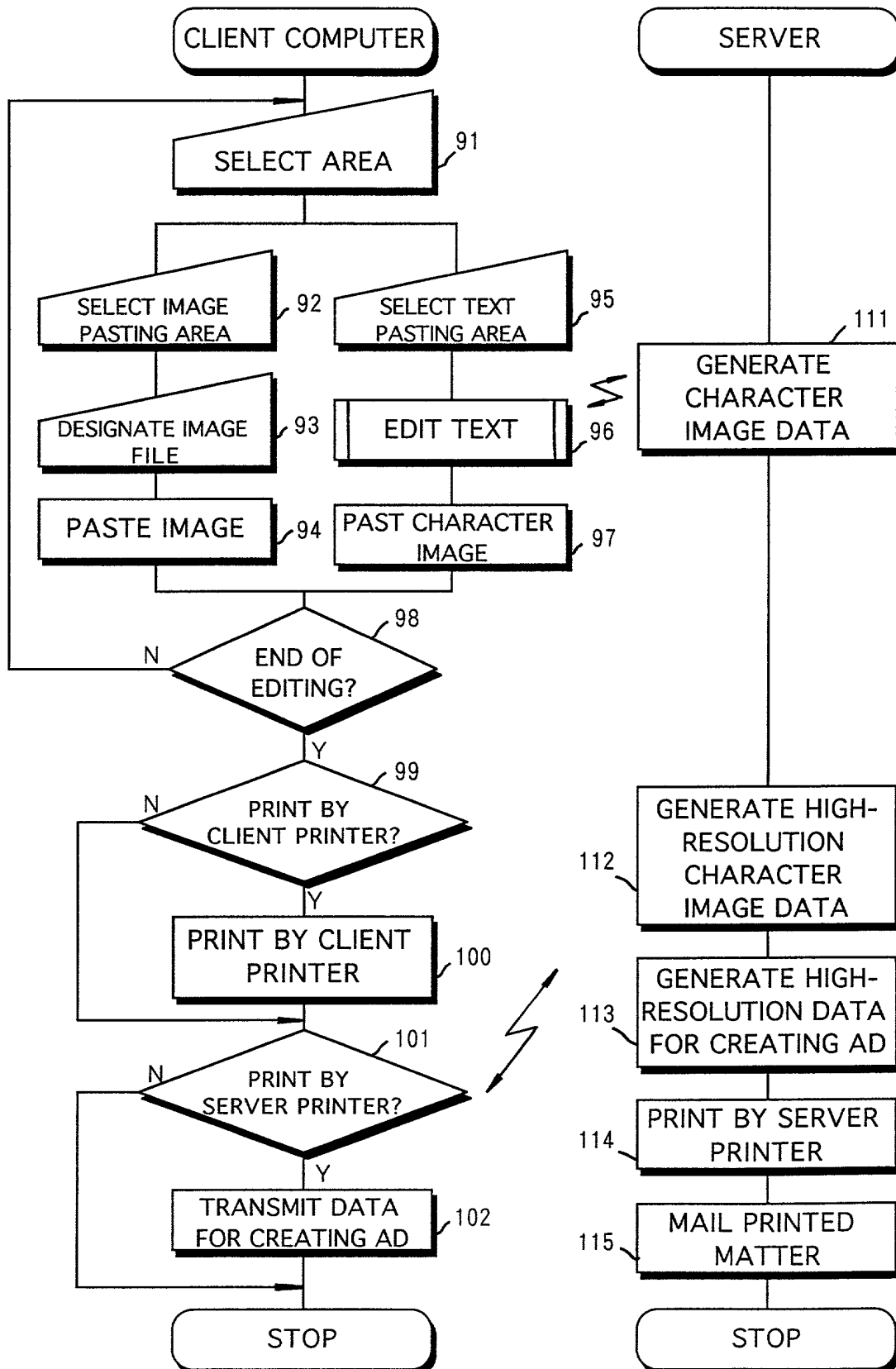
Fig. 6

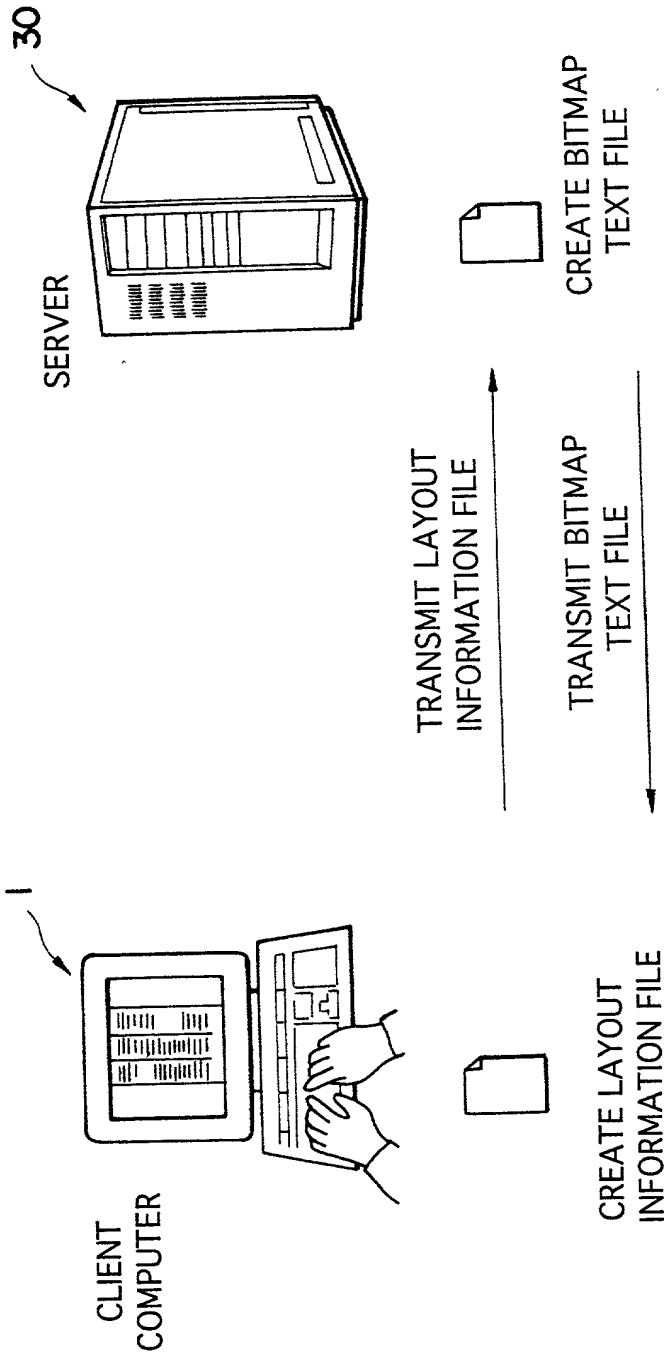
Fig. 7

Fig. 8

TEXT EDITING

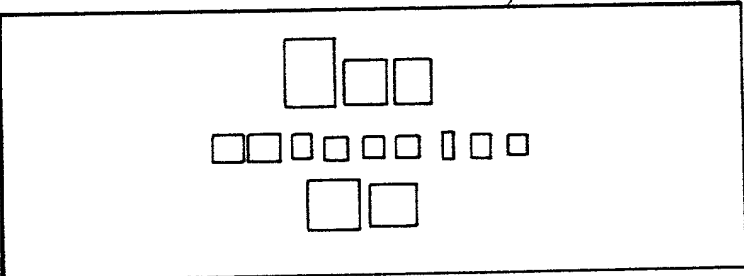
FONT A11
STANDARD GOTHIC FONT A12

SIZE
12
14
16
18 A13
20
22
24
28
32

STYLE A14
☒ BOLD
☐ ITALIC
☐ SUPERSCRIPIT
☐ SUBSCRIPT
☐ SHADOW
☐ OUTLINE

FONT PREVIEW A15
ABab1

TEXT INPUT A16
Den
European-style Beer Restaurant
DEN

PREVIEW A17


PREVIEW A18
PREVIEW

DOWNLOAD A19

OK A21 **CANCEL** A22

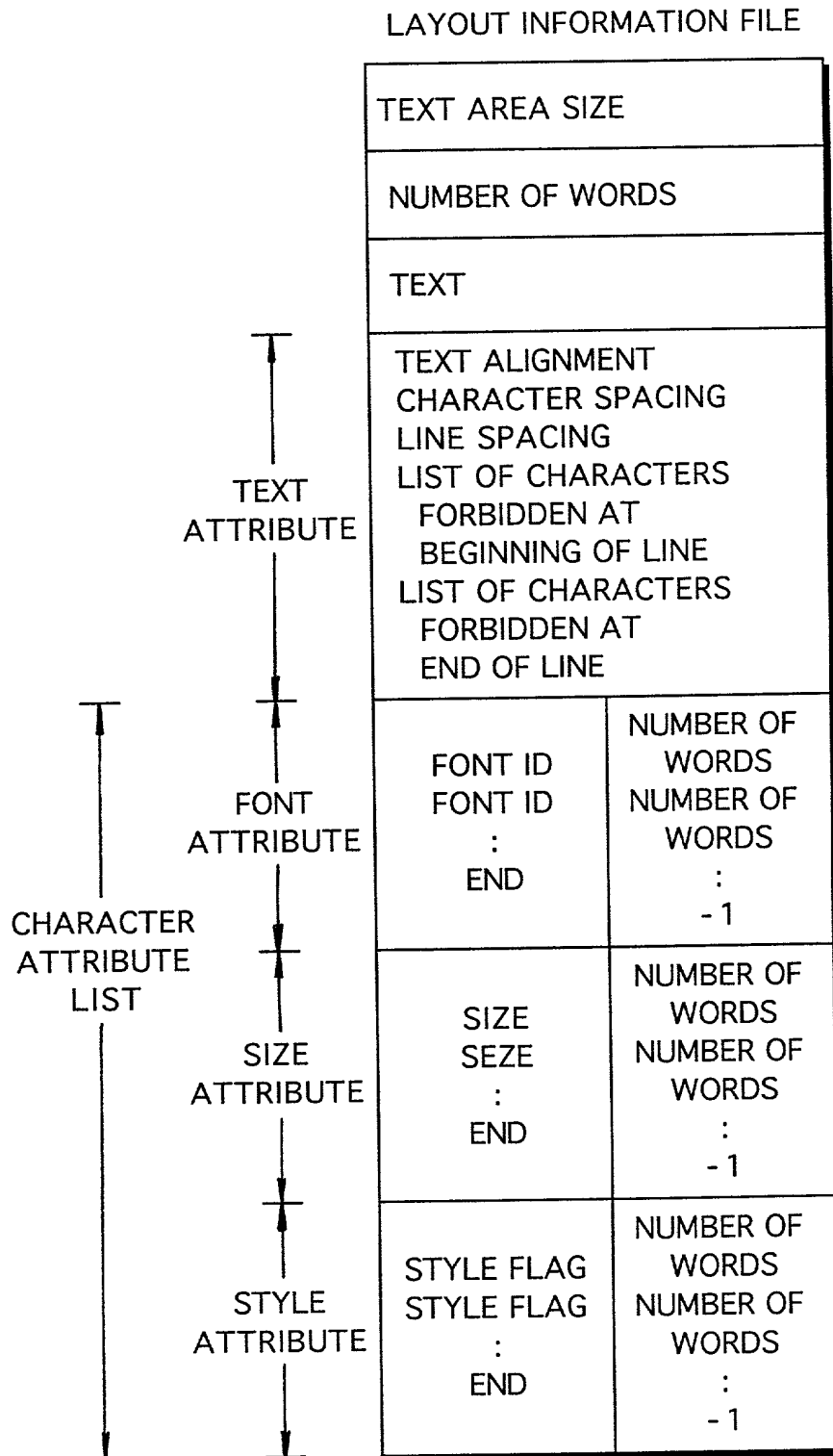
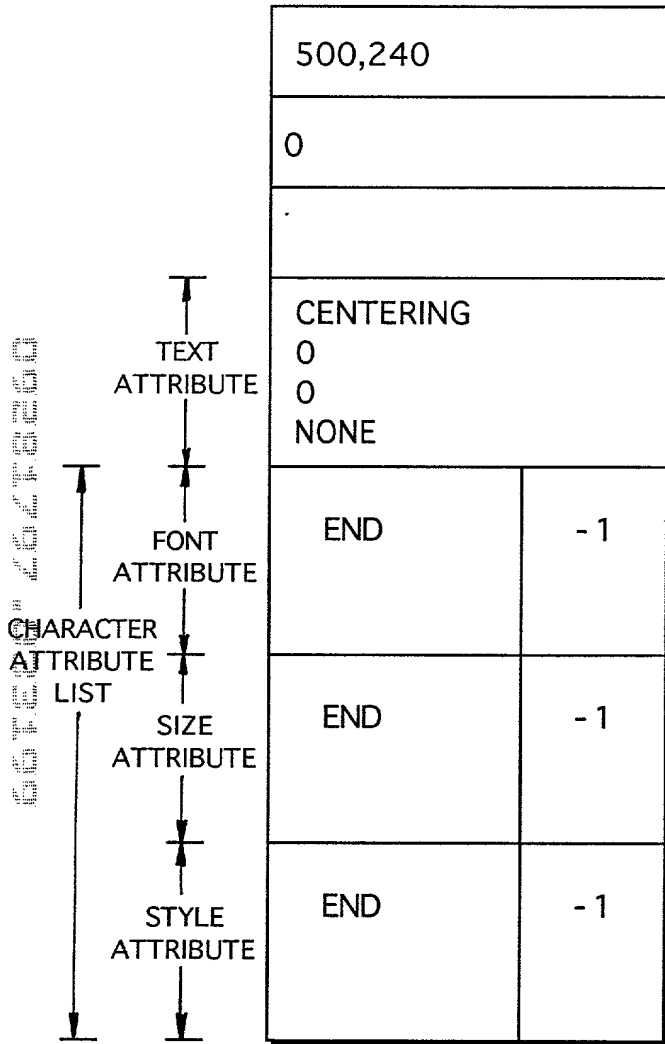
Fig. 9

Fig. 10a

LAYOUT INFORMATION FILE

*Fig. 10b*

LAYOUT INFORMATION FILE

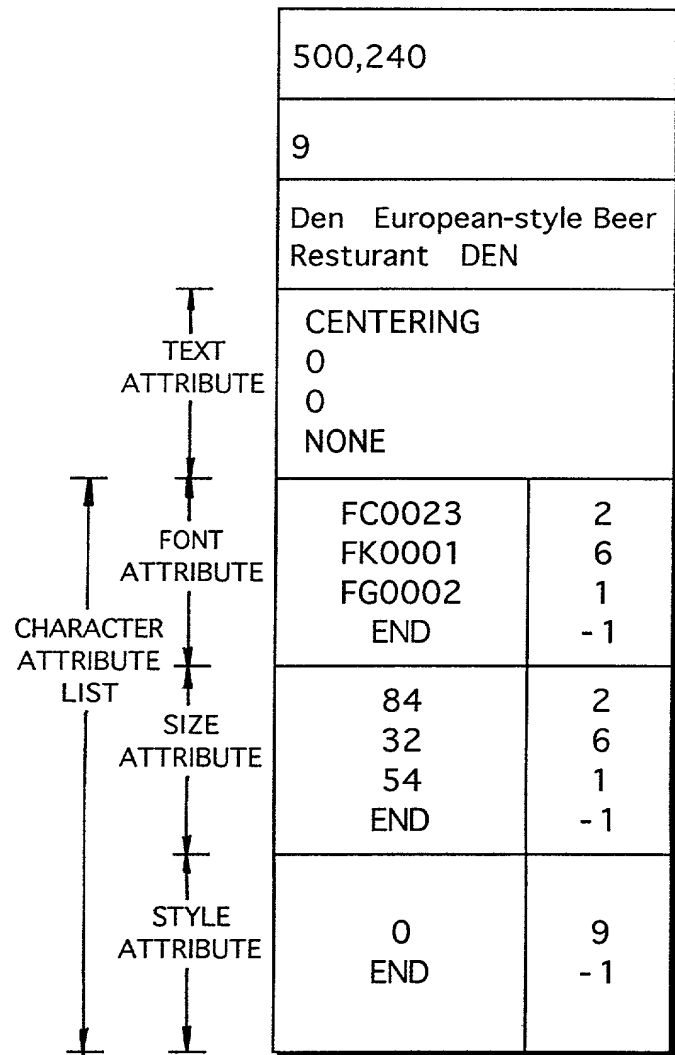


Fig. 11

DEFAULT TEXT ATTRIBUTES

JUSTIFIED LEFT
0
0
NONE

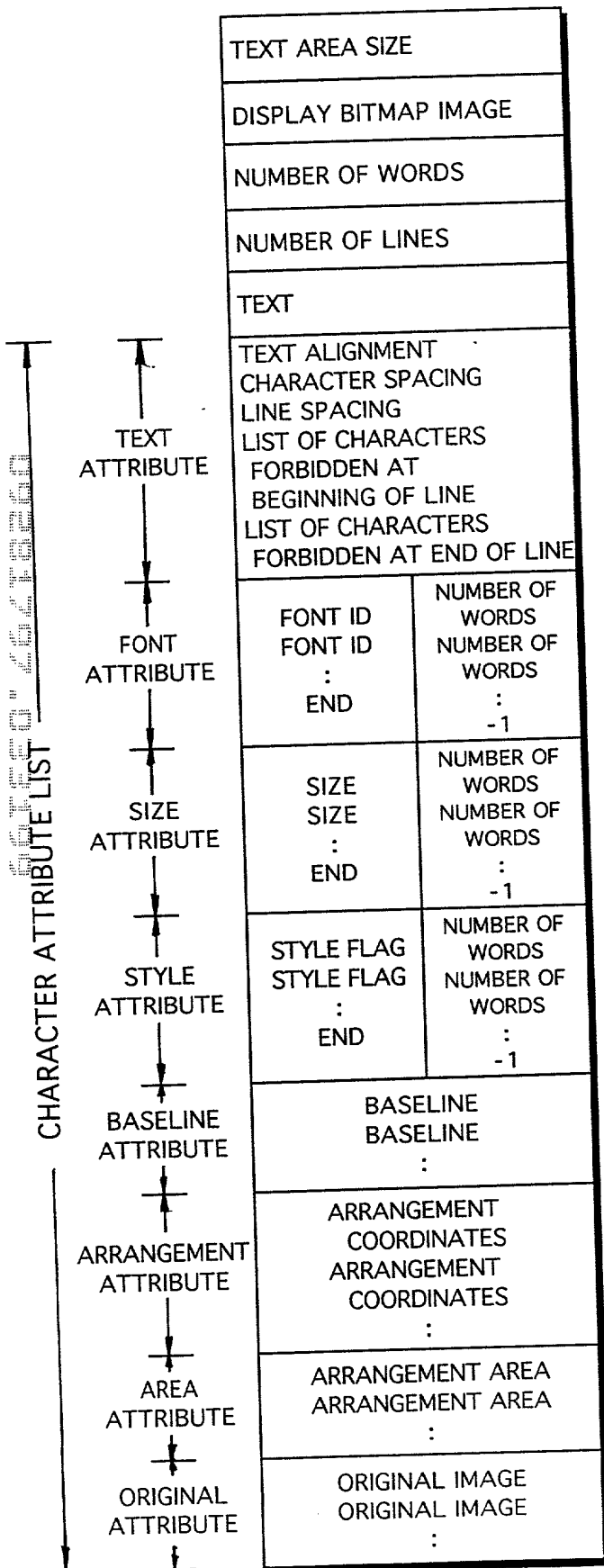
Fig. 12

FONT ID TABLE

FONT NAME	FONT ID	SAMPLE
FUJI GOTHIC	FG0001	ABab1
FUJIMARU GOTHIC	FG0002	ABab1
:	:	:
FUJI COMIC	FC0023	ABab1
:	:	:
FUJI BLOCK	FK0001	ABab1
:	:	:

Fig. 13a

BITMAP TEXT FILE

**Fig. 13b**

BITMAP TEXT FILE

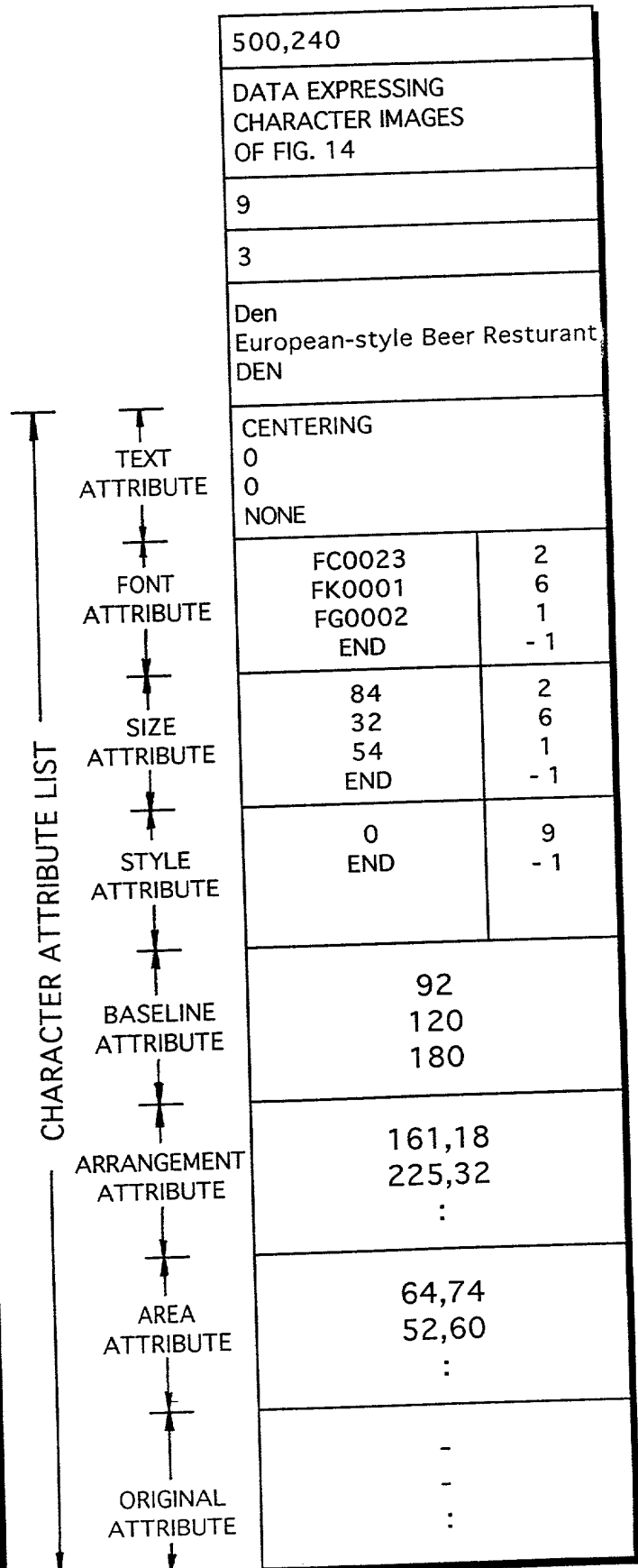


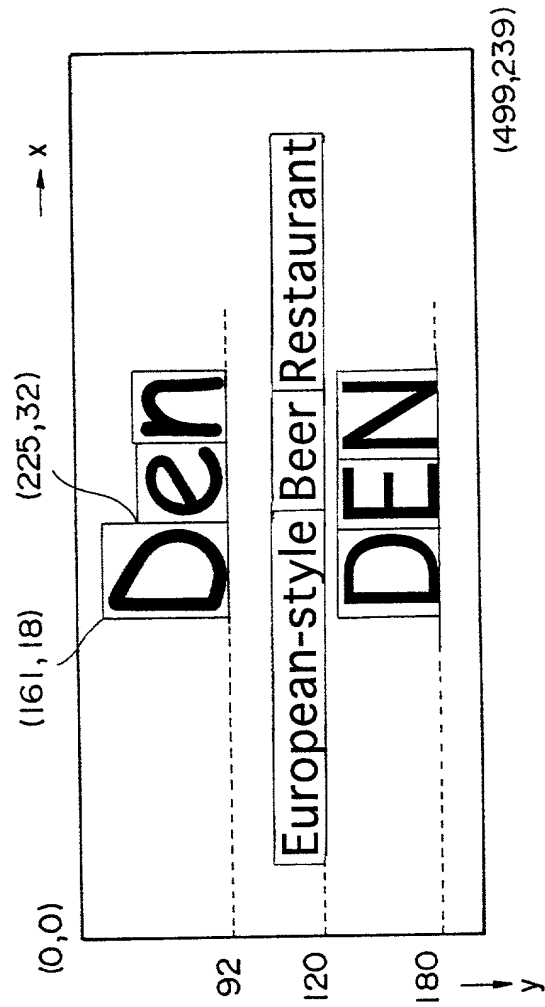
Fig. 14

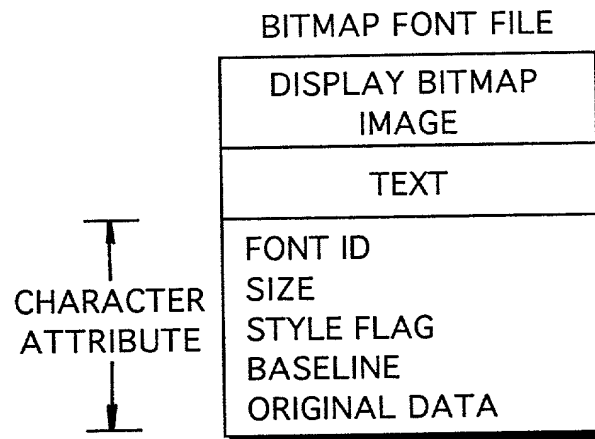
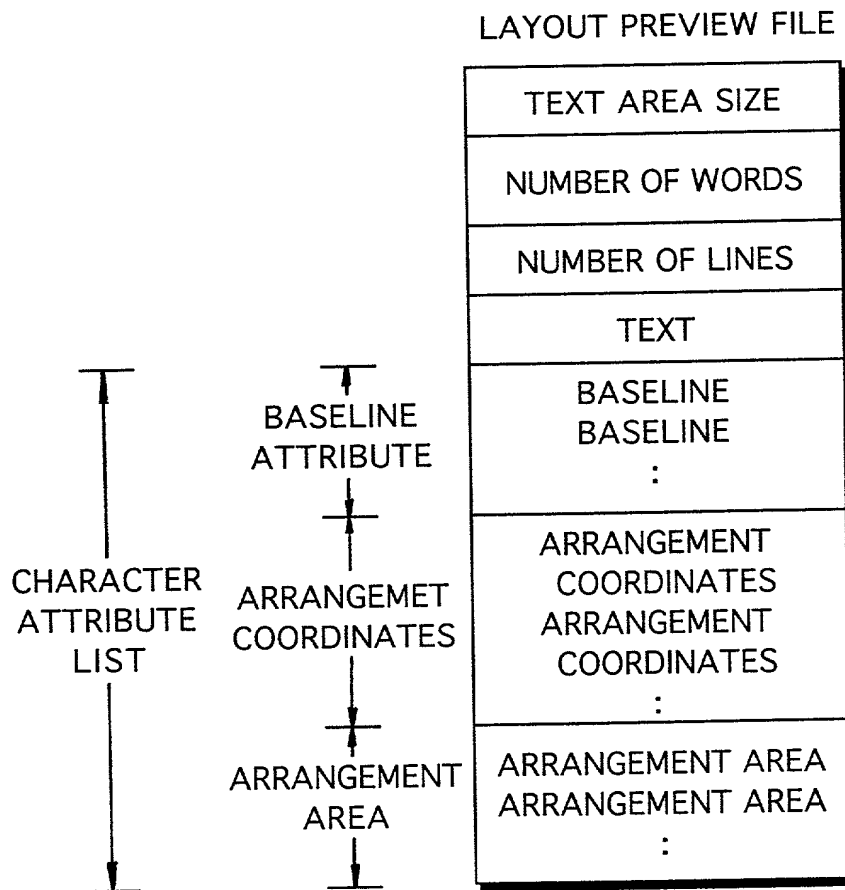
Fig. 15*Fig. 16*

Fig. 17

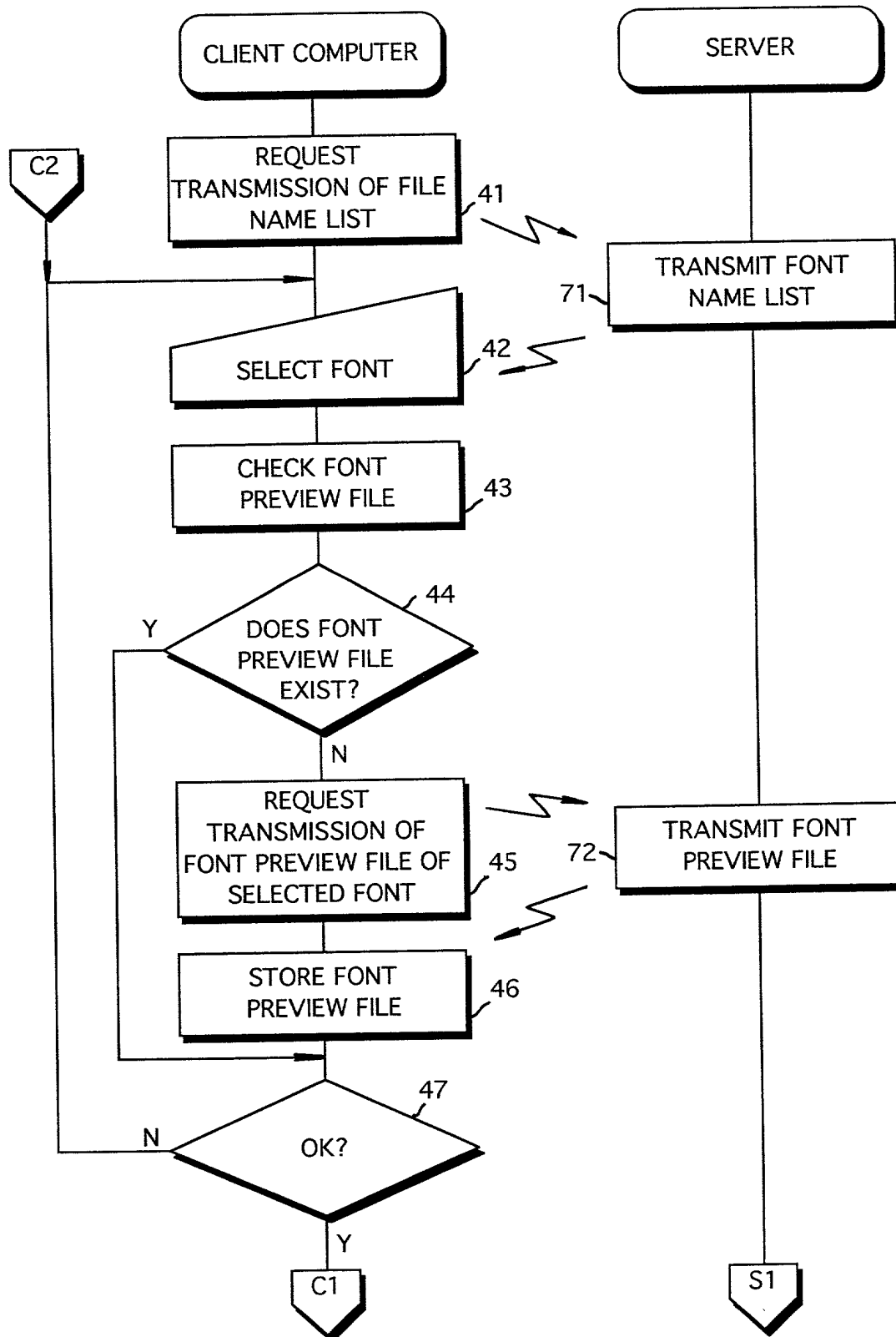


Fig. 18

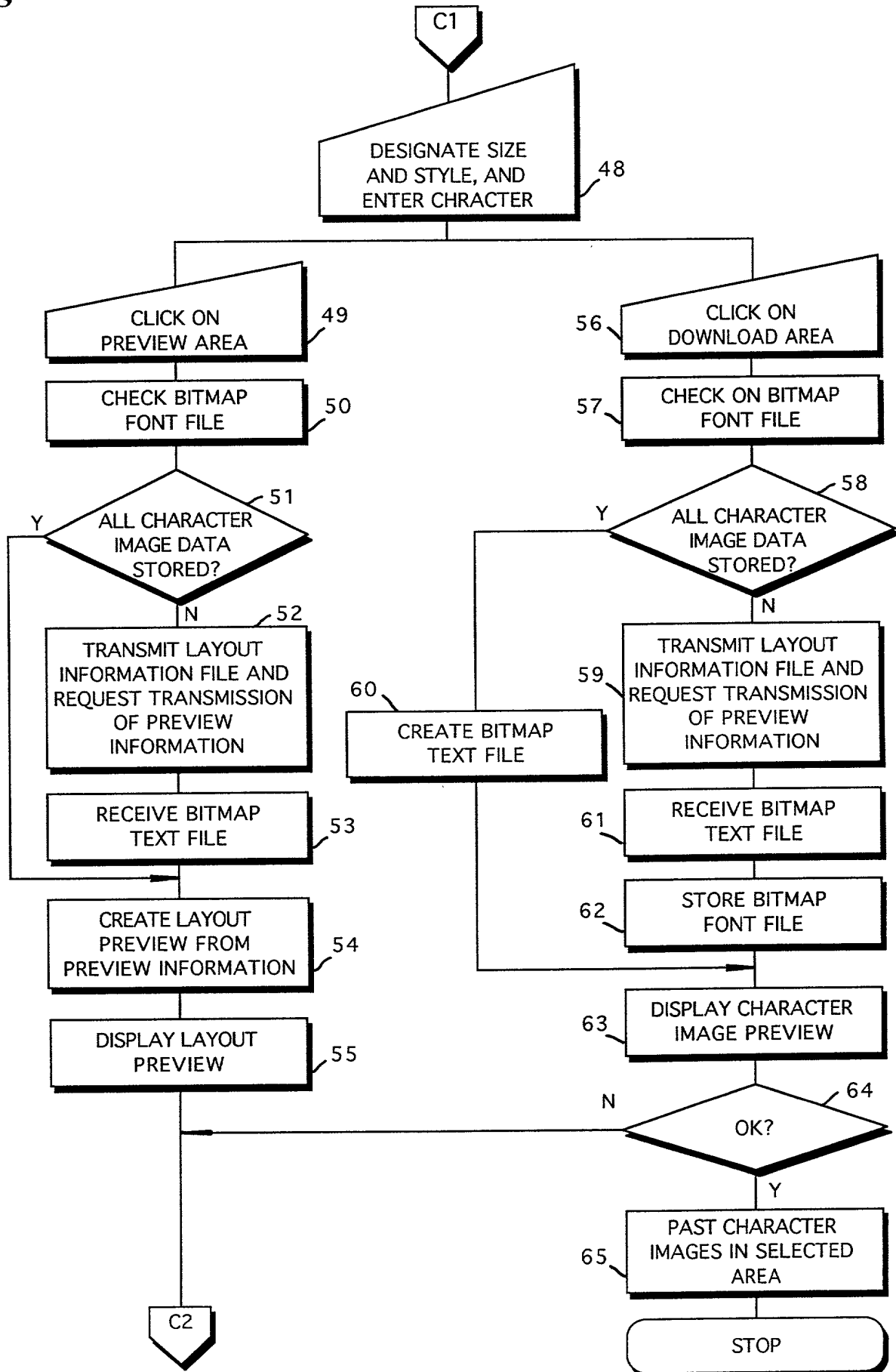


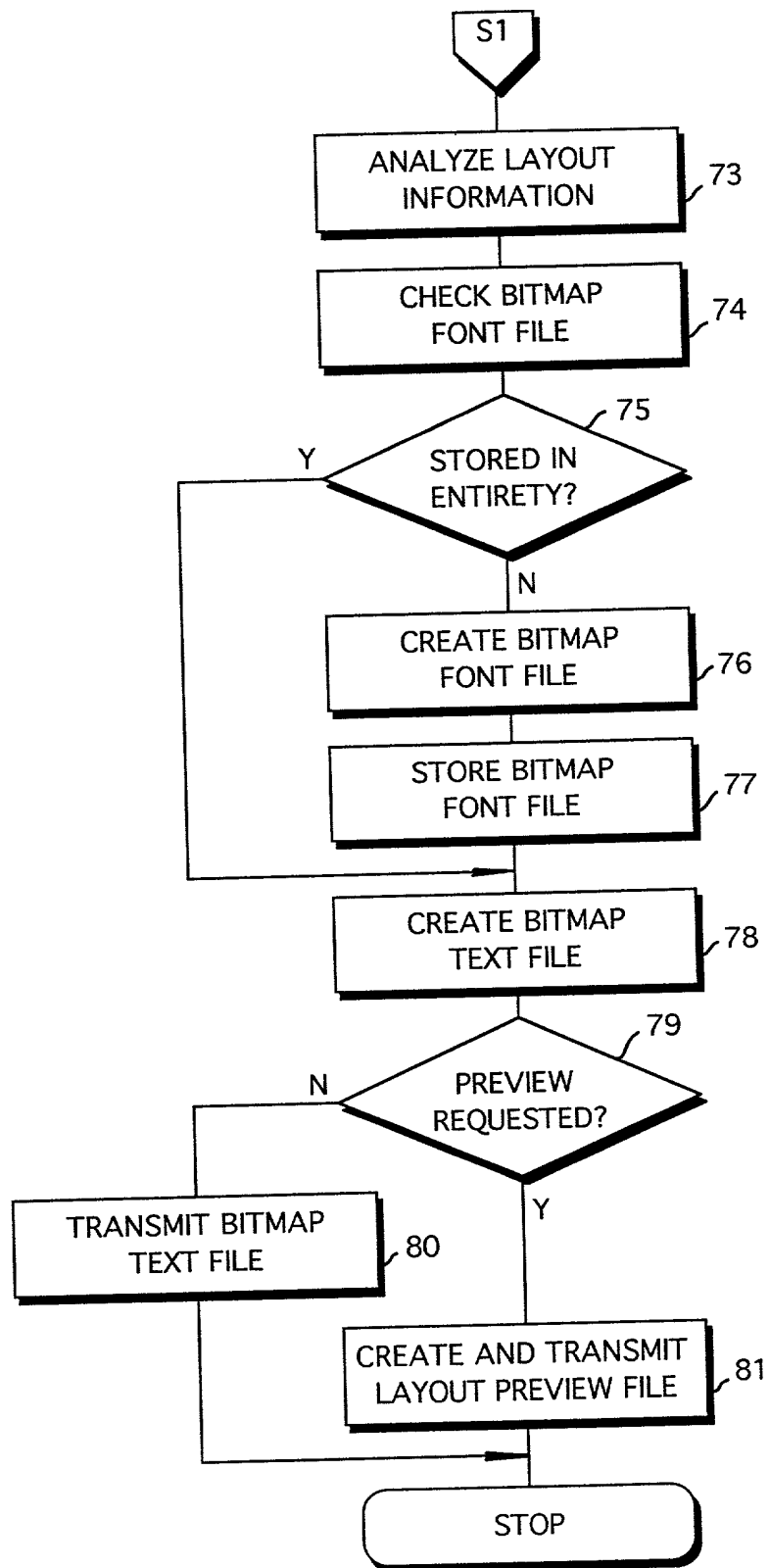
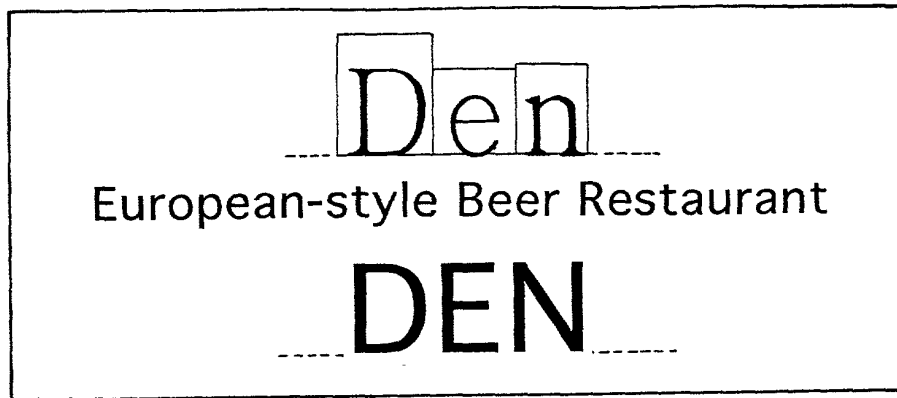
Fig. 19

Fig. 20**Fig. 21**

In English, the word "Den" stands for "cellar" or a lair where animals live, but it can also mean a comfortable room in which to relax.

Spend some time relaxing at the Den this evening.

Fig. 22a

0-0-0 Minami Aoyama,
Minato-ku, Tokyo
TEL: 03-0XXX-0000
FAX: 03-0XXX-XXXX

CREATED AT CHARACTER SIZE A20

Fig. 22b

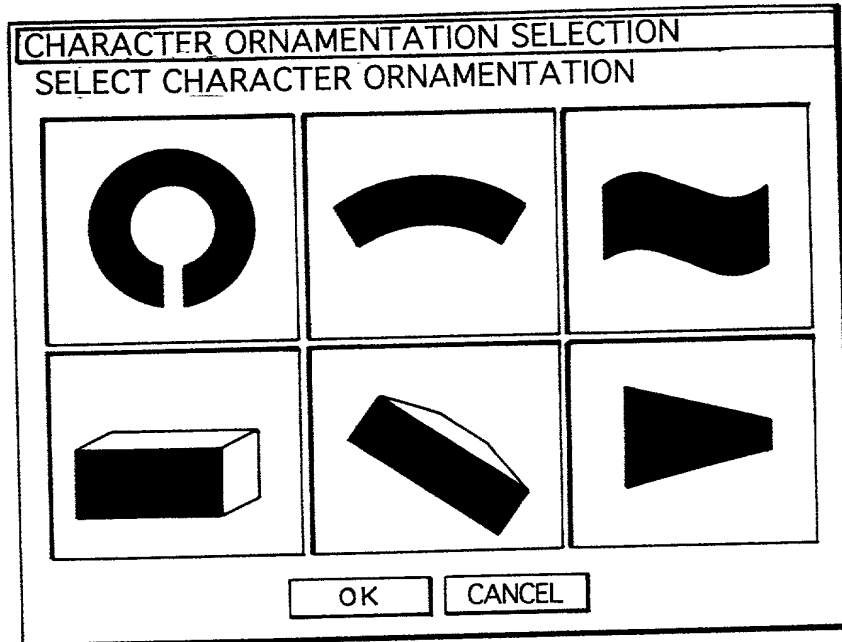
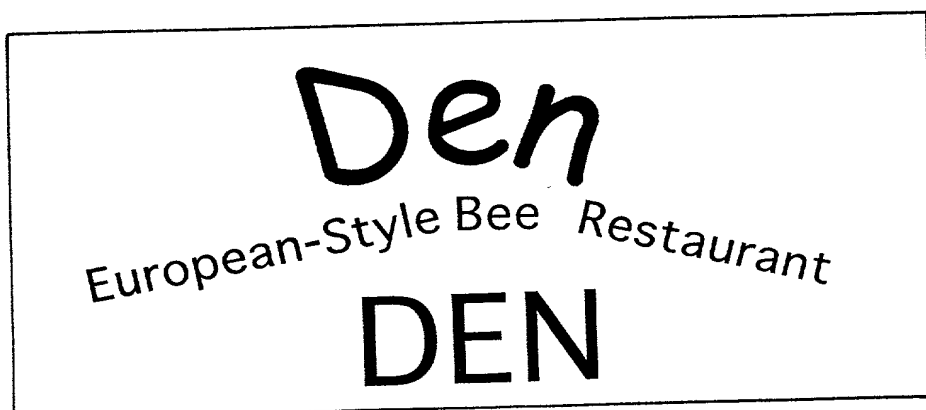
0-0-0 Minami Aoyama,
Minato-ku, Tokyo
TEL: 03-0XXX-0000
FAX: 03-0XXX-XXXX
BUSINESS HOURS: 11:00 AM -
10:30 PM

CREATED AT CHARACTER SIZE 19

Fig. 22c

0-0-0 Minami Aoyama,
Minato-ku, Tokyo
TEL: 03-0XXX-0000
FAX: 03-0XXX-XXXX
BUSINESS HOURS: 11:00 AM -
10:30 PM
CLOSED ON SECOND AND
THIRD WEDNESDAYS

CREATED AT CHARACTER SIZE 18

Fig. 23*Fig. 24*

BIRCH, STEWART, KOLASCH & BIRCH, LLP

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ATTORNEY DOCKET NO.

905-216P

PLEASE NOTE:
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COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT AND DESIGN APPLICATIONS

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated next to my name; that I verily believe that I am the original, first and sole inventor (if only one inventor is named below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Insert Title: →

FONT SHARING SYSTEM AND METHOD, AND RECORDING MEDIUM
STORING PROGRAM FOR EXECUTING FONT SHARING METHOD

Fill in Appropriate
Information —
For Use
Without
Specification
Attached:



the specification of which is attached hereto. If not attached hereto,

the specification was filed on _____ as
United States Application Number _____;
and amended on _____ (if applicable); and/or
the specification was filed on _____ as PCT
International Application Number _____; and was
amended under PCT Article 19 on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I do not know and do not believe the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (six months for designs) prior to this application, and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns, except as follows.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 (a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

Insert Priority
Information:
(if appropriate)



(Number)	(Country)	(Month / Day / Year Filed)	Yes	No
<u>10-101774</u>	<u>Japan</u>	<u>03/31/1998</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

Insert Provisional
Application(s): →
(if any)

(Application Number)	(Filing Date)
_____	_____
_____	_____

All Foreign Applications, if any, for any Patent or Inventor's Certificate Filed More than 12 Months (6 Months for Designs) Prior to the Filing Date of This Application:

Insert Requested
Information:
(if appropriate)

Country	Application Number	Date of Filing (Month / Day / Year)
_____	_____	_____
_____	_____	_____

I hereby claim the benefit under Title 35, United States Code, §120 of any United States and/or PCT application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States and/or PCT application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Insert Prior U.S.
Application(s): →
(if any)

(Application Number)	(Filing Date)	(Status — patented, pending, abandoned)
_____	_____	_____
_____	_____	_____

I hereby appoint the following attorneys to prosecute this application and/or an international application based on this application and to transact all business in the Patent and Trademark Office connected therewith and in connection with the resulting patent based on instructions received from the entity who first sent the application papers to the attorneys identified below, unless the inventor(s) or assignee provides said attorneys with a written notice to the contrary:

Raymond C. Stewart	(Reg. No. 21,066)	Terrell C. Birch	(Reg. No. 19,382)
Joseph A. Kolasch	(Reg. No. 22,463)	James M. Slattery	(Reg. No. 28,380)
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Charles Gorenstein	(Reg. No. 29,271)	Gerald M. Murphy, Jr.	(Reg. No. 28,977)
Leonard R. Svensson	(Reg. No. 30,330)	Terry L. Clark	(Reg. No. 32,644)
Andrew D. Meikle	(Reg. No. 32,868)	Marc S. Weiner	(Reg. No. 32,181)
Joe McKinney Muncy	(Reg. No. 32,334)	C. Joseph Faraci	(Reg. No. 32,350)
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First or Sole Inventor
Insert Name of Inventor →
Insert Date This Document is Signed
Insert Residence
Insert Citizenship →
Insert Post Office Address
Address →
Full Name of Second Inventor, if any see above

Full Name of Third Inventor, if any see above

Full Name of Fourth Inventor, if any see above

Full Name of Fifth Inventor, if any see above

GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
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c/o FUJI PHOTO FILM CO., LTD. 11-46, Senzui 3-chome, Asaka-shi, Saitama 351-0024, Japan			
GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)			CITIZENSHIP
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			
GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)			CITIZENSHIP
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			
GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)			CITIZENSHIP
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			
GIVEN NAME	FAMILY NAME	INVENTOR'S SIGNATURE	DATE*
Residence (City, State & Country)			CITIZENSHIP
POST OFFICE ADDRESS (Complete Street Address including City, State & Country)			